



HYDROINFORMATICS LAB



IBRAHIM DEMIR

PRESIDENTIAL CHAIR MICHAEL A. FITTS PRESIDENTIAL CHAIR IN ENVIRONMENTAL INFORMATICS AND ARTIFICIAL INTELLIGENCE

DIRECTOR HYDROINFORMATICS LAB

PROFESSOR RIVER-COASTAL SCIENCE & ENGINEERING – COMPUTER SCIENCE
TULANE UNIVERSITY

CONTACT INFORMATION

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<https://hydrointelligence.github.io>

SCHOLARLY ACTIVITY SUMMARY

Research Team: 37 members (current)

Current: 8 Postdoc/Researcher – 4 PhD/MD – 5 MS – 8 BS – 4 High School – Affiliates 8

Alumni: 139 (students [PhD, MS, BS, HS] / postdocs / researchers)

Teaching: 8 Courses – 1500+ Students – 5 New Courses – 5 Teaching & Technology Awards

Grants: 112 (total / funded) – Completed: 90 funded projects – Total Budget: \$37M+ (PI/Co-PI)

Active: 23 grants/projects - Pending: 38 proposals

Submission: 43 proposals (2025) – 30+ proposal per year (2017-2025)

Journal Articles: Total: 195 (published/in review) – 13,000 citations – 69 h-index – 148 i10-index

2026 (up to now): 19 (published) – 40 (in review) – 10 (ready to submit) – 31 (in preparation)

Conference: 45 proceedings – 294+ presentations – 127+ invited talks

Scholarly Work: 12 book/book chapters – 18 technical reports – 1 patent

150+ information systems, software libraries, benchmark datasets, cyber tools

Awards & Recognition: 36+ Awards – 35+ Media Interviews – 100+ Media Stories

iEMSs Fellow, International Environmental Modelling and Software Society

Chair, Leadership Board, International Joint Committee on Hydroinformatics (IAHR/IWA/IAHS)

Editorial: Associate Editor: *Environmental Modeling & Software* (Elsevier) – *J. of Hydroinformatics*

(IWA) – *J. of Environmental Informatics* (ISEIS) – *Water & Artificial Intelligence* (Frontiers) –

Cambridge Prisms: Water (Cambridge Uni. Press) – *Digital Water* (Taylor & Francis)

RESEARCH INTERESTS AND EXPERIENCE

- › Hydroinformatics, environmental informatics, digital twins, data management systems
- › Information and intelligent systems, internet, blockchain, web and mobile technologies
- › Scientific visualization, information communication and visual data analytics applications
- › High-performance computing, quantum computing, GPGPU and scientific software development
- › Big-data science, data mining, cloud computing, web and social media analytics and visualization
- › Artificial intelligence, deep neural networks, fuzzy logic, and genetic algorithms applications
- › Cyberlearning systems, large language models, conversational AI systems, automated AI agents
- › Game-based learning, virtual, augmented and mixed reality applications, metaverse technologies

EDUCATION

- 2005-2010 **Ph.D., University of Georgia**, Environmental Informatics and Control Program
Warnell School of Forestry and Natural Resources, Athens, GA, USA
- 2001-2004 **M.S., Gebze Institute of Technology**, Environmental Engineering, Kocaeli, TURKEY
- 1996-2000 **B.S., Bogazici (Bosporus) University**, Chemistry, Istanbul, TURKEY

APPOINTMENTS & RESEARCH EXPERIENCE

- 2025-present **Michael A. Fitts Presidential Chair in Environmental Informatics and Artificial Intelligence**, Tulane University
- 2025-present **Professor**, Computer Science, Tulane University (secondary appointment)
- 2025-present **Professor**, River-Coastal Science and Engineering, Tulane University
- 2025-present **Faculty Affiliate**, ByWater Institute, Tulane University
- 2025-present **Faculty Affiliate**, Center for Community-Engaged AI, Tulane University
- 2023-2024 **Robert and Virginia Wheeler Faculty Fellow in Engineering**
Named Faculty Position, University of Iowa
- 2023-2024 **Director of Technology**
Center for Hydrologic Development, University of Iowa
- 2023-2024 **Associate Professor** -- *secondary appointment – tenure track*
School of Planning and Public Affairs, University of Iowa
- 2021-2024 **Associate Professor** -- *main appointment – tenure track*
Department of Civil and Environmental Engineering, University of Iowa
- 2021-2024 **Associate Professor** -- *secondary appointment – tenure track*
Department of Electrical and Computer Engineering, University of Iowa
- 2021-2024 **Faculty Affiliate**, Interdisciplinary Graduate Program in

	Applied Mathematical and Computational Sciences (AMCS), University of Iowa
2016-2021	Assistant Professor -- main appointment – tenure track Department of Civil and Environmental Engineering, University of Iowa
2016-2021	Assistant Professor -- secondary appointment – tenure track Department of Electrical and Computer Engineering, University of Iowa
2016-2024	Associate Research Professor (Faculty Engineer) – research faculty track IIHR-Hydrosience & Engineering, Iowa Flood Center, University of Iowa
2018-2024	Faculty Affiliate Mid-America Transportation Center, US DOT
2016-2021	Informatics Cluster Faculty – cluster joint hire The Iowa Informatics Initiative, University of Iowa
2016-2021	Faculty Affiliate Early Career Faculty Academy, Center for Teaching, ITS, University of Iowa
2015-2016	Adjunct Assistant Professor Department of Electrical and Computer Engineering, University of Iowa
2015-2024	Faculty Affiliate Interdisciplinary Graduate Program in Informatics (IGPI) Geoinformatics and Information Science Tracks, University of Iowa
2014-2016	Faculty Affiliate Game-Based Learning Faculty Institute, Center for Teaching, ITS, University of Iowa
2013-2024	Faculty Affiliate Center for Global & Regional Environmental Research (CGRER), University of Iowa
2012-2016	Adjunct Assistant Professor Department of Civil and Environmental Engineering, University of Iowa
2011-2024	Faculty Affiliate Iowa Flood Center (IFC), University of Iowa
2011-2016	Assistant Research Professor (Faculty Engineer) – research track IIHR-Hydrosience & Engineering, University of Iowa
2010-2011	Postdoctoral Research Scholar Iowa Flood Center, IIHR-Hydrosience & Engineering, University of Iowa
2010	Postdoctoral Research Associate Environmental Informatics and Control Program, University of Georgia
2005-2010	Graduate Assistant Environmental Informatics and Control Program, University of Georgia
2002-2004	Research Assistant Department of Environmental Engineering, Gebze Institute of Technology, TURKEY

1999-2000	Research Project , Computational Chemistry Bogazici (Bosporus) University, Istanbul, TURKEY
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TEACHING EXPERIENCE

2026 Spring	Introduction to AI in Civil and Environmental Engineering, RCSE 4100/6100
2024 Fall	Civil Engineering Tools, CEE:2015:B
2024 Fall	Civil Engineering Tools, CEE:2015:A
2024 Spring	Informatics for Sustainable Systems, CEE:5310 (IGPI:5311/URB:5310)
2023 Fall	Engineering Problem Solving I, ENGR:1100:B
2023 Fall	Engineering Problem Solving I, ENGR:1100:A
2023 Spring	Informatics for Sustainable Systems, CEE:5310 (IGPI:5311/URB:5310)
2022 Fall	Engineering Problem Solving I, ENGR:1100:B
2022 Fall	Engineering Problem Solving I, ENGR:1100:A
2022 Spring	Informatics for Sustainable Systems, CEE:5310 (IGPI:5311)
2021 Fall	Water, Energy, Food Nexus Seminar, CEE:5096
2021 Fall	Engineering Problem Solving I, ENGR:1100:B
2021 Fall	Engineering Problem Solving I, ENGR:1100:A
2021 Spring	Water, Energy, Food Nexus Seminar, CEE:5096
2021 Spring	Informatics for Sustainable Systems, CEE:5310 (IGPI:5311)
2020 Fall	Water, Energy, Food Nexus Seminar, CEE:5096
2020 Spring	Practicum in College Teaching, GRAD:7400
2020 Spring	Water, Energy, Food Nexus Seminar, CEE:5096
2020 Spring	Informatics for Sustainable Systems, CEE:5310 (IGPI:5311)
2019 Fall	Engineering Problem Solving I, ENGR:1100:D
2019 Fall	Engineering Problem Solving I, ENGR:1100:C
2019 Spring	Informatics for Sustainable Systems, CEE:5310 (IGPI:5311)
2018 Fall	Engineering Problem Solving I, ENGR:1100:C
2018 Spring	Informatics for Sustainable Systems, CEE:5310 (IGPI:5311)
2017 Spring	Interdisciplinary Scientific Visualization, CEE:4410
2016 Fall	Introduction to Hydroinformatics, CEE:5186
2016 Summer	Summer Course Theme Leader, 2016 National Water Center Summer Institute Scientific Visualization and Data Integration for Hydrological Datasets

2013 Summer	Mentoring & Project Advisor, Google Summer of Code Program Mentoring students for design and development of open-source programming projects
2013 Fall	Information Systems for Resource Management (with Dr. Muste) Cross-listed as GEOG:5129, ME:5129, IE:5129, CEE:5129, ECE:5129.
2013 Fall	Project Advisor – Class Term Project Mentoring and collaborating with UIOWA MBA students to develop market analysis and business plan for a nation-wide flood information platform
2010 Fall	WASR 8500, Cities as Forces for Good in the Environment University of Georgia, Athens, GA, USA (with Drs. Walker and Beck)
2002-2004	Teaching Assistant , Gebze Institute of Technology, Kocaeli, TURKEY CMB553 - Optimization Techniques in Environmental Sciences CMB650 - Mathematical Modeling in Environmental Sciences CMB554 - Water Quality Management CMB406 - Introduction to Environmental Engineering I (Water Quality)

TRAINING ACTIVITIES AND OUTREACH SERVICES

Educational Services and Training

2025	Training Workshop, No-Code Visual Programming for Hydrology: AI-Enabled Web Platforms and Open-Source Tools for Research and Education, IAHR Training, Dec 8 - 12, 2025, Online.
2025	Training Workshop, Water Soft Hack – Cybertraining on Data Science, Machine Learning, Cyberinfrastructure and Cloud Computing Training in Water Science, Jul 28 - Aug 8, 2025, Online.
2025	Training Workshop, HydroSuite: Open-Source Community-Oriented Software Suite for Hydrological Research and Education, CIROH Developers Conference, May 28 - 30, 2025, Burlington, VT.
2024	Training Workshop, Water Soft Hack – Cybertraining on Data Science, Machine Learning, Cyberinfrastructure and Cloud Computing Training in Water Science, Jul 22 - Aug 2, 2024, Online.
2024	Training Workshop, HydroSuite: Open-Source Community-Oriented Software Suite for Hydrological Research and Education, CIROH Developers Conference, May 29 - Jun 1, 2024, Salt Lake City, UT.
2023	Training Workshop, HydroCompute: A Web-Based Parallel Computation Framework for Hydrological Analysis, CIROH Annual Training and Developers Conference, May 16-18, 2023, Salt Lake City, UT.
2023	Training Workshop, HydroLang: A Web-Based Framework for Hydrological Research, CIROH Annual Training and Developers Conference, May 16-18, 2023, Salt Lake City, UT.

Outreach Services and Lab Visits

2024	Career Discovery Tour by Kirkwood Community College Visit, high school students, Oct 15, 2024
2024	Blank Summer Institute Visit, junior high students, June 27, 2024
2024	IFC/IIHR Organized Student Visit, middle school, early high school students, January 9, 2024
2023	ISA:1040 Course Visit, undergrad students, two faculty, December 5, 2023
2023	IIHR Reunion Celebration Visit, UI alumni, students, staff, and faculty, July 14, 2023
2023	Summer Camp Group Visit, middle school students, June 29, 2023
2023	Mount Vernon Middle School Visit, middle school students, May 25, 2023
2023	Faith Academy Student Tour, 6th grade students, Mar 8, 2023
2022	Monmouth College Visit, undergraduate students, July 20, 2022
2022	Iowa National Summer Transportation Institute Visit, 16 junior high students and 4 staff members, June 27, 2022
2022	Mount Vernon Middle School Visit, 7th grade, May 23, 2022
2020	Texas Delegation Visit: Open House, Texas Delegation of State Officials, January 8, 2020
2019	UIOWA SSTP Program Visit, high school students, June 24, 2019
2019	Belin-Blank JSI Student Tour, 7th, 8th, 9th grade students, June 20, 2019
2019	IFC Anniversary Program, IFC community partners, faculty, students, June 13, 2019

STUDENT AND RESEARCHER ADVISING AND MENTORING

Current Students and Researchers

Postdoctoral Researchers & Engineers	M. Yusuf Sermet, 2020- present , Associate Research Professor Omer Mermer, 2023- present , Associate Research Professor Carlos Ezaro, 2025- present , Postdoctoral Researcher Ram Sajja, 2025- present , Postdoctoral Researcher Samrat Shrestha, 2025- present , Research Associate Likith Kadiyala, 2025- present , Research Associate Gabriel Vald, 2025- present , Research Associate Uditha Karunarathne, 2026- present , Research Associate <i>+2 new Research Associates joining in Summer/Fall 2026</i>
Thesis & Dissertation Advisor – Project	PhD Students Samiul Islam, 2023- present , PhD, Civil and Environmental Engineering Ege Duran, 2024- present , PhD, Civil and Environmental Engineering (thesis) Vinay Pursnani, 2024- present , PhD, Informatics

Supervisor Smruti Mahapatra, 2025-**present**, MD, School of Medicine

MS Students

Dilara Kizilkaya, 2024-**present**, MS, Computer Science
 Moaiz Abrar, 2024-**present**, MS, Data Science
 Moiyad Sufi, 2025-**present**, MS, Data Science
+5 new MS/PhD students joining in Fall 2026

Part-time Nikhil Singh, 2025-**present**, MS
Students / Irit Maulana, 2025-**present**, MS
Researchers Kaiden Mullinix, 2025-**present**, BS
 Kristin Trapanese, 2025-**present**, BS
 Ella Puckett, 2025-**present**, BS
 Campbell Endries, 2026-**present**, BS
 Luke Wheeler, 2026-**present**, BS
 Khoa Dang Le, 2026-**present**, BS
 DJ Heere, 2026-**present**, BS
 Aidan Woodard, 2026-**present**, BS
 Kento Sugiyama, 2025-**present**, High School (intern)
 Arush Gunukula, 2025-**present**, High School (intern)
 Dhruv Mandala, 2025-**present**, High School (intern)
 Eddie Zhang, 2024-**present**, High School (intern)

Part-time Elnaz Saadatmand, 2025-**present**, MS, CEE
Research Almas Alzhanov, 2025-**present**, PhD, CEE
Affiliates Fang Qi, 2025, 2026-**present**, PhD, Computer Science
 Bekir Z. Demiray, 2025-**present**, PhD, Informatics
 Ali Rahmani, 2025-**present**, PhD, Informatics
 Ugur Satilmis, 2025-**present**, PhD, CEE
 Jerry Mount, 2025-**present**, Assistant Research Scientist
 Gregory J. Ewing, 2025-**present**, PhD, CEE

Thesis & Haoyi Xiong, 2021-**present**, PhD, Geographical and Sustainability Science, UIOWA
Dissertation Jason Hua, 2023-**present**, PhD, CEE, University of Iowa
Committees

Alumni & Past Students and Researchers

Graduate Bekir Z. Demiray, 2021-2025, PhD, Informatics
Students with Ugur Satilmis, 2024-2025, PhD, Environmental Engineering
Thesis / Ali Rahmani, 2023-2025, PhD, Informatics
Dissertation Carlos Ezaro, 2021-2025, PhD, CEE (now Postdoc)
 Ram Sajja, 2022-2025, PhD, ECE (now Postdoc)
 Gregory J. Ewing, 2019-2025, PhD, CEE (now engineer)

Zhouyayan Li, 2020-2024, PhD, CEE (now AI Scientist)
Yazeed Alabbad, 2019-2023, PhD, CEE (now Assistant Prof.)
M. Ali Sit, 2019-2023, PhD, Informatics (now AI Scientist)
Enes Yildirim, 2017-2022, PhD, CEE (now Assistant Prof)
Zhongrun Xiang, 2017-2022, PhD, CEE (now Principal Data Scientist)
Yusuf Sermet, 2015-2020, PhD, ECE (now Research Faculty)
Carlos Erazo, 2018-2020, MS, CEE (now PhD student)
Haowen Xu, 2015-2019, PhD, CEE (now Postdoc)
Enes Yildirim, 2015-2017, MS, CEE

Graduate Fang Qi, 2025, PhD, Computer Science

Students – Gabriel Vald, 2023-2025, MS, Informatics

non-thesis Samrat Shrestha, 2023-2025, MS, CS

Uditha Karunarathne, 2023-2025, MS, CS

Eveline Gonzalez, 2023-2025, MS, Informatics

Deepika Mitta, 2024-2025, MS, Data Science

Moippyad Sufi, 2024-2025, MS, Data Science

Harshal Lele, 2024-2025, MS, CS

Likith Kadiyala, 2023-2025, MS, CS

Vinay Pursnani, 2023-2024, MS, CS

Beyza Cikmaz, 2022-2024, MS, URP

Anchit Dave, 2022-2024, MS, CS

Talat Satilmisoglu, 2022-2024, PhD, CEE

Maeve Biscupski, 2022-2023, MS, SD

Stewart Sankey, 2023, MS, CS

Samiul Islam, 2022-2023, MS, URP

Amitha George, 2022-2023, MS, CS

Nikhil Singh, 2021-2022, MS, CS

Ashani Vaidya, 2021-2022, MS, CS

Vahid E. Akhlaghi, 2020-2022, PhD, BA

Zeeshan Ahmed, 2021, MS, CS

Bekir Z. Demiray, 2019-2021, MS, CS

Muneeb Shahid, 2019-2021, MS, CS

Isha Panvalkar, 2020, MS, CS, UIOWA

M. Ali Sit, 2017-2019, MS, CS

Shobhit Narain, 2018-2019, MS, CS

Peng Chen, 2017-2019, MS, CS

Zhongyang Guan, 2017-2018, MS, CS

Dichha Rai, 2017-2018, MS, CS

Mudathir Yahia, 2016-2017, MS, CS

Suleyman Uslu, 2016-2017, MS, CS

Haider Hameed, 2015-2017, MS, CS

	Osman Sonmez, 2012-2013, PhD, IIHR
Thesis & Dissertation Committees	Emma House, 2023-2025, PhD, CEE, Tulane University Stephen Siemonsma, 2023-2025, PhD, ECE, University of Iowa Chung-Yuan Liang, 2021-2025, PhD, CEE, Purdue University Pin-Ching Li, 2021-2023, PhD, CEE, Purdue University Navid Jadidoleslam, 2016-2021, PhD, CEE Mohsen Vahidzadeh, 2019-2020, PhD, CEE Ali Cikmaz, 2015-2020, PhD, Education Andre D. L. Zanchetta, 2015-2017, MS, CEE Vahid E. Akhlaghi, 2020-2022, PhD, Business Analytics, UIOWA
Researchers & Engineers	Jerry Mount, 2019-2025, Assistant Research Scientist Ahmet N. Ozcivan, 2024-2025, Postdoctoral Scholar Baran Kaynak, 2023-2025, Visiting Postdoctoral Scholar Sumeyye Kaynak, 2023-2025, Visiting Postdoctoral Scholar Ozlem B. Yesilkoy, 2021-2024, Postdoctoral Researcher Dinesh Jackson Samuel, 2023-2024, Postdoctoral Researcher Chris M. Murphy, 2023, Application Developer Serhan Yesilkoy, 2021-2023, Postdoctoral Researcher Dixon Vimalajeewa, 2021, Postdoc, CS Samuel Debionne, 2015-2017, Software Developer Andre D. L. Zanchetta, 2017-2018, Software Developer
Part-time Students / Researchers	Julia R Wiegel, 2025-2026, MS, Stats Olivia Lynch, 2025, BS Kevin Song, 2023-2025, High School (intern) Mike Zeng, 2024-2025, High School (intern) Sanzida R. Setu, 2024-2025, MS, URP Delicious R. Kaba, 2024-2025, MS, CEE Quazi Ruku, 2024-2025, MS, Geoinformatics Ella M. Thompson, 2024-2025, BS, CBE Z. Betul Sit, 2024-2025, BS, CS Ishan Dhanani, 2023-2024, BS, Data Science Reuben Sonnenschein, 2024, BS, CS Muhammed Cikmaz, 2022-2024, High School (intern) Colin Hu, 2024, High School (intern) Rundransh Pathak, 2024, High School (intern) Shirley Xiong, 2024, High School (intern) Ege Duran, 2022-2024, BS, CEE Eslim Rana Emiroğlu, 2023-2024, BS, CS Cori Ann G. Grant, 2022- 2024, BS, DS Anish Jain, 2023, High School (intern)

Satvik Sandru, 2023, High School (intern)
Riya Patil, 2023, High School (intern)
Jacob P. Nemec, 2022-2023, BS, EES
Joshua Qin, 2022-2023, High School (intern)
Zitong Wang, 2022-2023, High School (intern)
Jiaqi Zhao, 2022, High School (intern)
Sahil Bhatia, 2022, High School (intern)
Mehmed Sahin, 2022, High School (intern)
Shiva Goli, 2022, High School (intern)
Qiuayu Gu, 2022, BS, CS
Beyza Cikmaz, 2021, BS, UP
Kane Templeton, 2021, MS, CS
Ryan Skrzypek, 2021, BSE, CSE
Kevin Nguyen, 2021, BA, Business
Serena Chen, 2021, High School (intern)
Luana Liao, 2021, High School (intern)
Vaibhav Mishra, 2020, High School (intern)
Ishan Goyal, 2021, High School, (intern)
Edgar Babajanyan, 2020-2021, High School (intern)
Indrani Ghosh, 2020-2021, MS, CS
Zachary Macke, 2019-2020, BS, CS
Zhouyayan Li, 2019-2020, BS, CEE (intern)
Takumi Niwa, 2019, BS, ECE (intern)
Arman Habib, 2019, MS, CEE (intern)
Joshua Feuerstein, 2019-2020, High School (intern)
Anthony Maggio, 2019, High School (intern)
Aman Manazir, 2018-2019, High School (intern)
Akshat Gautam, 2018-2019, High School (intern)
Anson Hu, 2018-2019, High School (intern) (now BS at MIT)
Runxiong Dong, 2019, MS, CS (now at Amazon)
Yifan He, 2019, MS, Computer Science (part-time)
Bekir Zahit Demiray, 2018, MS, CS (intern)
Jeremy M. Ferguson, 2018, High School (intern)
Flavia K. R. Hauss, 2018, BS, CEE (intern)
Omar Bin Salameh, 2018, BS, CS (part-time)
Tsutomu Fujisawa, 2017, BS, CS (intern)
M. Ali Sit, 2015-2017, BS, CS (intern)
Mary B. Windsor, 2015-2017, IIHR (part-time)
Paul E. Villanueva, 2016, BS, part-time (intern)
Bomo Shen, 2014-2016, BS, CS (now at OmniVista Solutions)
Ian Wold, 2014-2015, BS, CS (part-time)

Yusuf Sermet, 2014, BS, ECE (intern)
A.T.M. Saleh, 2014, part-time (remote)
Darnell K. Melvin Jr., 2014, BS, ISU (part-time)
Ramil Agliamzanov, 2013, BS, ECE (intern)
Rachel Cortez, 2013, BS, CEE (part-time)
Skeel Lee, 2013, part-time (Google SOC)
Hemant Singh, 2013, part-time (Google SOC)
Nikhil Upadhye, 2013, part-time (Google SOC)
Eric Osgood, 2012-2013, MS, MIE
Jake Maschoff, 2012, BS, CEE
Aaron Fisher, 2011, BS, CS

RESEARCH GRANTS, FUNDING & ACADEMIC SUPPORT

Active Grants and Projects (Role: PI/co-PI)

[1]	Role: co-I	‘Catalyzing Green Infrastructure Implementation through the Southeast Louisiana Adaptation Forum’
	2026-27	Source: NASEM , NOLA Support: \$100K
[2]	Role: PI	‘HydroTwin: An AI-Driven Digital Twin for Optimizing Industrial Water Economics and Resource Resilience’
	2026-27	Source: Tulane , FUEL Support: \$10K
[3]	Role: PI	‘Novel Hydroinformatics and Artificial Intelligence Research and Applications’
	2025-26	Source: LA LONI , Computing Grant Support: 1.5M CPU/GPU hour
[4]	Role: co-PI	‘Virtual Patient Advocate for NICU Families: Persona-Aware, Uncertainty-Informed Coaching to Improve Discharge Understanding and Follow-through’
	2025-26	Source: Tulane , AI Seed Grant Support: \$30K
[5]	Role: Collab	‘Utilizing Virtual Reality as a Teaching Tool for Radiation Safety’
	2025-26	Source: UIOWA , ATAC Support: \$50K
[6]	Role: co-PI	‘De-IdentiPHI: A Multimodal LLM-Based Tool for Automated De-identification of Clinical Data’
	2025-26	Source: Tulane , Provost Proof of Concept Support: \$50K
[7]	Role: PI	‘Transforming Satellite Remote Sensing Analysis with Geospatial Foundation AI Models for Disaster Resilience’
	2025-26	Source: Tulane , SpaceSSE Support: \$15K
[8]	Role: co-PI	‘AI for Nursing Initiative (AIN): Tulane-led National Certification and Open-Source Benchmarking Program’
	2025-26	Source: Tulane , AI4All Support: \$5K
[9]	Role: Mentor	‘Gulf Research Program Fellowships and Scholars Programs’
	2025-27	Source: NASEM Support: \$75K
[10]	Role: Advisor	‘AI-Enhanced Information Transfer during Nurse Shift Changes’

	2025-26	Source: Pioneer for E-Team Program	Support: \$5K
[11]	Role: PI	'CrowdSimAI: An Open-Access Platform for Community-Driven Exploration and Analysis of AI "Crowd Wisdom" in Urban and Environmental Decision-Making'	
	2025-26	Source: Tulane , Community-Engaged AI	Support: \$10K
[12]	Role: PI	'HydroSignal: An Intelligent Monitoring and Communication Platform for Hydrological Research, Education and Outreach'	
	2025-26	Source: Tulane , Carol L. Bernick Faculty Grants	Support: \$10K
[13]	Role: co-PI	'AI for All: Plan for Next 1,000 Days'	
	2025-28	Source: Tulane , SSE	Support: \$525K
[14]	Role: co-PI	'Expanding the NWM FIM to Support Infrastructure and Impact Using Multi-Model and Improved Visualization and Communication of Actionable Intelligence in Flood Early Warning'	
	2025-27	Source: NOAA , CIROH	Support: \$1.4M
[15]	Role: co-PI	'Turning Research into Actionable Information for Operational Impact by Advancing NOAA's National Cyberinfrastructure, CIROH Portal, and Web and Mobile Apps'	
	2025-27	Source: NOAA , CIROH	Support: \$900K
[16]	Role: co-PI	'PFI-TT: Developing a Novel Hybrid Streamflow Monitoring System (HyGage)'	
	2025-27	Source: NSF , PFI	Support: \$550K
[17]	Role: PI	'AI-Driven Hydrologic Analysis and Communication Hub for Enhanced Water Resource Management in Iowa'	
	2025-27	Source: USGS , IWC	Support: \$243K
[18]	Role: PI	'POSE: Phase I: An Open-Source Ecosystem of Next-Gen Web Technologies for Hydrological Education, Research, and Operations (OSE-HERO)'	
	2024-26	Source: NSF , POSE	Support: \$300K
[19]	Role: PI	'Maintenance: Information and Decision System for Poultry Infectious Diseases'	
	2024-26	Source: North Central (Iowa) Poultry Association	Support: \$17K
[20]	Role: PI	'CyberTraining: Implementation: Small: Inclusive Cyberinfrastructure and Machine Learning Training to Advance Water Science Research'	
	2023-26	Source: NSF , CyberTraining Program	Support: \$125K
[21]	Role: PI	'Collaborative Research: A Physics-Informed Flood Early Warning System for Agricultural Watersheds with Explainable Deep Learning and Process-Based Modeling'	
	2023-26	Source: NSF , Hydrology	Support: \$200K
[22]	Role: co-PI	'Co-LEARN: A Midwestern Community of Learning for Empowerment, Climate Adaptation and Resilience for the Next Generation'	
	2023-28	Source: NOAA , RISA	Support: \$6M
[23]	Role: co-PI	'Novel Integration of Direct Measurements with Numerical Models for Real-time Estimation and Forecasting of Streamflow Response to Cyclical Processes: Time Varying Flow and Seasonal Changes of Riparian Roughness'	
	2021-26	Source: NSF , Hydrology	Support: \$403K

Completed Grants and Projects (Role: PI/co-PI)

[24]	Role: co-PI	‘CIROH: Intelligent Data Analytics and Communication Cyberinfrastructure for Research to Operations in Hydrology’
	2022-25	Source: NOAA , CIROH Support: \$2.25M
[25]	Role: co-PI	‘CIROH: Adapting the Iowa Flood Center’s Hillslope Link Model for Compatibility with the NextGen Framework’
	2024-25	Source: NOAA , CIROH Support: \$250K
[26]	Role: PI	‘CIROH: Comparative Assessment of the NWM Channel Routing Models for Enhanced Streamflow Data Assimilation’
	2023-25	Source: NOAA , CIROH Support: \$395K
[27]	Role: co-PI	‘Convergence Accelerator Track E: Linking the Green Economy to the Blue Economy at the Coast (Phase 2)’
	2022-25	Source: NSF , Convergence Accelerator Support: \$1.5M
[28]	Role: co-PI	‘E-Tailored Pain Management Support for Dementia Family Caregivers’
	2022-25	Source: Alzheimer's Association Support: \$150K
[29]	Role: PI	‘Improving Data Anomaly Detection and Forecasting in the US Army Corps of Engineers Reservoir Sedimentation Information (RSI) Database’
	2023-25	Source: USACE Support: \$34K
[30]	Role: co-PI	‘Growing Iowa into a Leader in Airborne and Ground-based Earth Science Measurement Capability’
	2024-27	Source: UIOWA , P3 Support: \$1.3M
[31]	Role: PI	‘An Intelligent Human-Centric Communication System for Adverse Weather and Road Conditions’
	2023-25	Source: DOT , US, Aurora Pool Fund Support: \$190K
[32]	Role: co-PI	‘CIROH: Novel Physically-based Streamflow Monitoring Methodology’
	2023-25	Source: NOAA , CIROH Support: \$390K
[33]	Role: PI	‘CIROH: Novel Geospatial Architecture of Channel and Floodplain Morphological Attributes within the OWP Hydrofabrics’
	2023-25	Source: NOAA , CIROH Support: \$185K
[34]	Role: PI	‘CIROH: A Collaborative Approach to Develop Comprehensive FIM Data, Models, and Methods with Emphasis on Transportation Infrastructure’
	2023-25	Source: NOAA , CIROH Support: \$140K
[35]	Role: PI	‘CIROH: AI-Augmented Immersive Digital Twin and Visual Analytics Framework for Hydrology’
	2023-25	Source: NOAA , CIROH Support: \$250K
[36]	Role: PI	‘Development of Foundational Large and Multimodal Language Models for Hydrology Research and Education’
	2024-25	Source: NSF , NAIRR Support: \$25K (GPU Access)
[37]	Role: PI	‘Enhancing Educational Accessibility and Engagement through AI-Augmented Open Educational Resources’

	2024-25	Source: UIOWA , OpenHawks	Support: \$9K
[38]	Role: PI	'Enhancing Agricultural Safety: Predictive Analysis of Injury and Fatality Factors'	
	2024-25	Source: IPRC , UIOWA	Support: \$25K
[39]	Role: PI	'Academic AI Hub – AI-Assisted Academic Framework and Services'	
	2024-25	Source: NSF , i-Corps	Support: \$50K
[40]	Role: PI	'Maintenance and Support for South Dakota (Big Sioux) Flood Information System'	
	2020-24	Source: SD DNR / RESPEC	Support: \$110K
[41]	Role: co-PI	'Intelligent Transportation Network Decision Support with Real-time Routing and Data Analytics'	
	2023-24	Source: DOT , US, MATC	Support: \$450K
[42]	Role: collab	'GP-GO: Iowa Environmental Internship Pathways Program'	
	2022-24	Source: NSF , IUOE:GEOPATHs	Support: \$425K
[43]	Role: PI	'UIOWA Hackathon'	
	2016-24	Source: NSF , MBDH, UI & Industry Partners	Support: \$250K+
[44]	Role: PI	'A Digital Twin Framework for Civic and Environmental Analysis of Railways'	
	2023-24	Source: UIOWA , OVPR Community Scholars	Support: \$50K
[45]	Role: PI	'FloodRSS: Flood Resilience Support System for Participatory Community Action'	
	2023-24	Source: USGS , IWC, Seed Grant Program	Support: \$20K
[46]	Role: PI	'Open-Source Community Development for Next-Gen Web Technologies in Hydrological Research and Education'	
	2023-24	Source: NSF , MBDH	Support: \$35K
[47]	Role: PI	'Phase 3: AI-Enabled Intelligent Assistant (AIIA) for Personalized and Adaptive Learning and Advising'	
	2023-24	Source: UIOWA , ATAC	Support: \$54K
[48]	Role: collab	'Iowa's AI Journey: First Steps in AI Support for Research, Scholarly and Creative Activities'	
	2024-26	Source: UIOWA , P3	Support: \$615K
[49]	Role: collab	'A Proposal for Iowa's AI Journey: First Steps in General AI Support'	
	2024-26	Source: UIOWA , P3	Support: \$784K
[50]	Role: co-PI	'Climate-Driven Health Vulnerabilities of Rural Well Users'	
	2023-24	Source: UIOWA , OVPR Interdisciplinary Scholars	Support: \$100K
[51]	Role: PI	'Actionable Flood Warnings Based on Ground-truth Data to Support Iowa DOT BridgeWatch Platform'	
	2022-24	Source: DOT , IA	Support: \$60K
[52]	Role: co-PI	'Assessing the Flood Reduction Benefits of On-road Structures'	
	2021-24	Source: DOT , IA	Support: \$450K
[53]	Role: co-PI	'Design Guidelines and Mitigation Strategies for Reducing Sedimentation of Multi-Barrel Culverts'	
	2020-24	Source: DOT , US	Support: \$270K
[54]	Role: PI	'River Morphology Data and Analysis Tools (RiverMorph) – A web platform for	

		enabling river morphology research'	
	2020-24	Source: NSF , Geoinformatics	Support: \$504K
[55]	Role: PI	'Watershed-Level Multi-Criteria Quantification of Agricultural Sustainability for Iowa'	
	2022-23	Source: UIOWA , ISSFP	Support: \$40K
[56]	Role: PI	'Phase 2 - AI-Enabled Intelligent Assistant (AIIA) for Personalized and Adaptive Learning and Advising'	
	2022-23	Source: UIOWA , ATAC	Support: \$30K
[57]	Role: PI	'Information and Decision System for Poultry Infectious Diseases'	
	2022-23	Source: North Central Poultry Association	Support: \$25K
[58]	Role: PI	'Identification of Dominant Factors and Modeling Harmful Algal Bloom Dynamics for Major Lakes in Iowa'	
	2022-23	Source: UIOWA , Iowa Healthy Lakes Initiative	Support: \$22K
[59]	Role: PI	'Extension for Big Sioux Flood Information System'	
	2022-23	Source: South Dakota DNR / RESPEC	Support: \$16K
[60]	Role: co-PI	'Disaster Route Planning for Floods'	
	2017-23	Source: MATC , US DOT	Support: \$450K
[61]	Role: co-PI	'HydroLang: An Open-Source Web-Based Programming Framework for Hydrological Community'	
	2022-23	Source: CUAHSI HIF	Support: \$5K
[62]	Role: co-PI	'NSF Convergence Accelerator Track E: Linking the Green Economy to the Blue Economy at the Coast'	
	2021-22	Source: NSF Convergence	Support: \$750K
[63]	Role: PI	'AI-Enabled Intelligent Assistant (AIIA) for Personalized and Adaptive Learning and Advising'	
	2021-22	Source: UIOWA , ATAC	Support: \$26K
[64]	Role: co-PI	'Coupling Physical and Societal Objectives for Decision Making in Water Resources Management'	
	2021-22	Source: IWC	Support: \$5K
[65]	Role: co-PI	'A Serious Game on Flood Mitigation for K-12 and Public Education'	
	2021-22	Source: IWC	Support: \$5K
[66]	Role: co-PI	'Data Anomaly Detection and Sediment Yield Estimation in the USACE's Reservoir Sedimentation Information (RSI) Database'	
	2020-22	Source: USACE	Support: \$50K
[67]	Role: co-PI	'Evaluation of HAND Flood Inundation Maps in Iowa'	
	2020-21	Source: UCAR Comet Program	Support: \$15K
[68]	Role: collab	'Multimorbidity in Patients with Alzheimer's Disease and Association with Pain and Health Care Utilization using Big Data Approaches'	
	2020-21	Source: NIH	Support: \$375K
[69]	Role: co-PI	'Missouri River Flood Inundation Model and Information System'	

	2020-21	Source: Iowa Economic Development Authority	Support: \$800K
[70]	Role: co-PI	'Enhancing Ethical Context in the Engineering Curriculum: Ethical Dilemmas in Building New Buildings Card Game'	
	2020-21	Source: COE Ethics	Support: \$5K
[71]	Role: co-PI	'Next-Generation Stage Measurement at Ungauged Locations using IoT'	
	2020-21	Source: IWC	Support: \$5K
[72]	Role: PI	'NVIDIA Deep Learning Institute Access – 200 Teaching Kits'	
	2019-20	Source: NVIDIA	Support: \$18K (teaching kits)
[73]	Role: co-PI	'Semi-Volatile PCBs: Sources, Exposures, Toxicities'	
	2019-21	Source: US NIH	Support: \$1.1M
[74]	Role: PI	'Spatial and Temporal Data Augmentation for Radar-Rainfall Products Using Deep Neural Networks'	
	2019	Source: NVIDIA , Academic Partnership Program	Support: \$7K (NVIDIA GPU)
[75]	Role: co-PI	'Critical Zone Observatory for Intensively Managed Landscapes (IML-CZO)'	
	2019-20	Source: NSF CZO	Support: \$25K
[76]	Role: PI	'Inundation Damage Assessment Maps for Non-leveed Iowa Communities Mississippi River Front'	
	2019	Source: USACE	Support: \$30K
[77]	Role: PI	Ethical and Moral Challenges for Engineers and AI: A Web-Based Serious Game for Engineering Decision Making'	
	2019-20	Source: CoE , UIOWA	Support: \$20K
[78]	Role: PI	'Quantum Computing Applications in Environmental Science'	
	2019	Source: Rigetti , Quantum Cloud Services	Support: \$5K (cloud credit)
[79]	Role: co-PI	'Connecting Rural and Peri-urban Farmers to Demonstrate and Disseminate Innovative Nutrient and Sediment Reduction Practices'	
	2019-22	Source: EPA	Support: \$1M
[80]	Role: PI	'Framework: Software: Collaborative Research: CyberWater—An open and sustainable framework for diverse data and model integration with provenance and access to HPC'	
	2019-22	Source: NSF CSSI	Support: \$125K
[81]	Role: collab	'Development of Caregivers' Barriers to Pain Management Screening Questions and Revision of the Educational Material in the Caregiver Pain Management Manual'	
	2018-21	Source: Woodrow W. Morris Gerontology	Support: \$10K
[82]	Role: PI	'Water Quality Data Visualization'	
	2018-19	Source: UIOWA CHEEC	Support: \$38K
[83]	Role: PI	'Improving Data Integration and Exchange for EPA Current Discovery Tool'	
	2018-20	Source: EPA	Support: \$192K
[84]	Role: PI	'Integrated Data Framework for Agricultural Flood Damage and Loss Analysis'	
	2018-19	Source: NSF Big Data Hub – DigitalAg Spoke	Support: \$5K

[85]	Role: PI	‘An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin’	
	2018-21	Source: NSF Big Data Hub Program	Support: \$1M
[86]	Role: PI	‘Interactive Projector System for Collaborative Research, Communication and Outreach Activities’	
	2018-19	Source: UIOWA CEE	Support: \$7K
[87]	Role: co-PI	‘Transfer of the Iowa DOT Culverts Web-Tool Prototype to Iowa DOT Mainframe’	
	2018-19	Source: Iowa DOT	Support: \$75K
[88]	Role: PI	‘Data Visualization Project for Homeland Security’	
	2017-18	Source: Iowa Homeland Security	Support: \$61K
[89]	Role: PI	‘Data Visualization of IWA Data and Project Sites’	
	2017-21	Source: Iowa Homeland Security	Support: \$68K
[90]	Role: co-PI	‘EAGER: PPER: Validation and Utilization of a New Tool for Citizen-Led Water Quality Monitoring in Agricultural Watersheds’	
	2017-18	Source: NSF Eager	Support: \$88K
[91]	Role: PI	‘Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence’	
	2017-20	Source: Microsoft & ESRI , AI for Earth	Support: \$20K (cloud credit)
[92]	Role: co-PI	‘Decision Support Tool for the Texas Multi-Hazard Tournament’	
	2017	Source: USACE	Support: \$41K
[93]	Role: PI	‘GPGPU Techniques for Environmental Modeling Applications’	
	2016	Source: NVIDIA , Academic Partnership Program	Support: \$3K (NVIDIA GPU)
[94]	Role: co-PI	‘Develop a Hydrologic and Hydraulic Model of the Big Sioux River Basin’	
	2016-20	Source: South Dakota DNR	Support: \$190K
[95]	Role: PI	‘Interactive Web-based Digital Exhibit for Rainfall and Flood Data and Tools’	
	2016	Source: UIOWA	Support: \$3K
[96]	Role: co-PI	‘Smart Ag-Practice Forecasting for Interconnected Communities: Supplemental request for BCS #1114978’	
	2016-19	Source: NSF	Support: \$1.2M
[97]	Role: co-PI	‘A Pilot Project for Cloud-based NEXRAD Data Processing, Analysis, and Visualization for Flood Forecasting and Water Resources Management’	
	2016-17	Source: Unidata	Support: \$16K
[98]	Role: co-PI	‘Initial All-Hands Meeting in Digital Agriculture’	
	2016	Source: NSF , Midwest Big Data Hub	Support: \$20K
[99]	Role: co-PI	‘Iowa Watershed Approach for Urban and Rural Resilience’	
	2016-21	Source: Iowa EDA , U.S. Dept. of HUD	Support: \$6.5M
[100]	Role: PI	‘AWS Educate Program for Institutions’	
	2015	Source: Amazon , Cloud Resources for Education	Support: \$20K (cloud credit)
[101]	Role: co-PI	‘Iowa Water Quality Information System’	

2015-18	Source: Carver Foundation	Support: \$453K
[102 Role: co-PI	Prototype Multi-Jurisdictional Decision-Making Web Platform for Integrated Water Resources Management: From Interagency Collaboration to Implementation in Iowa-Cedar Watershed (Iowa)'	
2014-16	Source: US DoD , Army Corps of Engineers	Support: \$180K
[103 Role: PI	'Web-based Augmented and Virtual Reality Flood Simulation Platform for Game-based Learning of Hydrological Concepts'	
2014-15	Source: UIOWA , Game-based Learning Institute	Support: \$1K
[104 Role: PI	'Improving Visualization and Access to Radar Data using Unidata Tools for Flood Prediction and Management'	
2014-15	Source: Unidata , Equipment Awards Program	Support: \$11K
[105 Role: co-PI	'Exploring Cloud Computing Capabilities for Iowa Flood Information System'	
2013-14	Source: Amazon Web Services in Education Grant	Support: \$30K (cloud credit)
[106 Role: PI	'Collaboration with Scientific Visualization Studio (SVS) at Goddard Space Flight Center'	
2013	Source: NASA EPSCoR Program	Support: \$3K
[107 Role: PI	'Web-based Augmented and Virtual Reality Flood Simulation Platform for Game-based Learning of Hydrological Concepts'	
2013-14	Source: UIOWA , ATAC	Support: \$12K
[108 Role: PI	'Design and Development of GPU-based Information Visualization Interfaces for Hydrological and Meteorological Data'	
2013	Source: NVIDIA , Academic Partnership Program	Support: \$5K (NVIDIA GPU)
[109 Role: PI	'Google Maps Engine Public Data Program'	
2013	Source: Google , Map Engine	Support: \$5K (cloud credit)
[110 Role: PI	'National Flood Information System'	
2013	Source: Google , Compute Engine	Support: \$4K (cloud credit)
[111 Role: PI	'FloodCube: National Flood Information System'	
2013	Source: US Ignite , Gigabit Explorer Challenge	Support: \$5K (travel support)
[112 Role: PI	'Design and Development of Open Source Programming Projects for the Iowa Flood Center, University of Iowa'	
2013	Source: Google Summer of Code	Support: \$18K
[113 Role: PI	'Design and Development of UCF CHAMPS Hydrologic Information System'	
2013	Source: University of Central Florida	Support: \$16K
[114 Role: PI	'Design and Development of GPU-based Information Visualization Interfaces for Hydrological and Meteorological Data'	
2013	Source: NVIDIA , Academic Partnership Program	Support: \$10K (NVIDIA GPU)
[115 Role: PI	'Design and Development of BlackBerry Smartphone and Tablet Applications'	
2012	Source: BlackBerry Academic Program	Support: \$7K (BlackBerry)
[116 Role: co-chair	'EarthCube Community Workshop: Designing A Roadmap for Workflows in Geosciences'	

2012	Source: NSF – EarthCube	Support: \$100K
[117 Role: co-PI	'Global Water Platform – Phase IA: Planning, Design and Development of A Web-Based Platform on Water and Sustainability Issues'	
2009	Source: International Water Association	Support: \$50K
[118 Role: collab	'Iowa Flood Center'	
2011-16	Source: State of Iowa	Support: \$188K (total: \$17+M)
[119 Role: collab	'Iowa Floodplain Mapping Program'	
2011-16	Source: Iowa Department of Natural Resources	Support: \$185K (total: \$10M)

PUBLICATIONS & PRESENTATIONS

Thesis & Dissertation

- [1] PhD Dissertation, 'Integrated Web-Based Data Management, Analysis and Visualization: Towards an Adaptive Watershed Information System', 2010
Advisor: M. Bruce Beck, Professor & Eminent Scholar, University of Georgia, Athens, GA, USA
- [2] MS Thesis, 'Fuzzy Logic and Neural Network Applications in Environmental Science', 2003
Advisors: Guleda Onkal-Engin and Mehmet Karpuzcu, Gebze Institute of Technology, TURKEY

Books & Book Chapters

- [3] **Book:** 'Artificial Intelligence in Hydroinformatics', Volume: 'Advanced Machine Learning' (in production)
2026, **Taylor & Francis**. Edited by Demir, I., Freni, G.
- [4] **Chapter:** Demir, et al., 'Cyberinfrastructure Systems for Flood Preparedness and Response' (in preparation)
Book: 'Oxford Research Encyclopedia of Natural Hazard Science', ISBN: 9780199389407
2026, **Oxford University Press**. Edited by Susan L. Cutter et al. (in contract/preparation)
- [5] **Chapter:** Demir I., Freni, G., 'Introduction to Artificial Intelligence and Hydroinformatics' (in production)
Book: 'Artificial Intelligence in Hydroinformatics', Volume: 'Advanced Machine Learning'
2026, **Taylor & Francis**. Edited by Demir, I., Freni, G.
- [6] **Chapter:** Demir et al., 'Next Generation AI-Enabled Hydrological Data Analytics, Scientific Computing and Knowledge Communication' (in production)
Book: 'Artificial Intelligence in Hydroinformatics', Volume: 'Advanced Machine Learning'
2026, **Taylor & Francis**. Edited by Demir, I., Freni, G.
- [7] **Chapter:** Demir et al., 'Enhancing Environmental and Disaster Education with AI-Driven Tutoring and Immersive Gamification' (in production)
Book: 'Transforming Education with AI: Focus on Content, Analytics, and Inclusivity'
2026, **Springer**. Edited by L. Daniela, et al.

- [8] **Chapter:** Demir et al., 'Adaptive Learning and Personalized Assessments with Generative AI: Insights from Higher Education and Professional Training'
Book: 'Generative AI in Higher Education Assessment – Theory, Practice, and Ethical Implications' 2026, **Springer**. Edited by M. Lahby et al.
- [9] **Chapter:** Demiray, B.Z., Mermer, O., Baydaroglu, O., and Demir, I., 'Predicting Harmful Algal Blooms Using Explainable Deep Learning Models: A Comparative Study'
Book: 'Aquatic Ecosystems: Biodiversity and Conservation', ISBN: 978-3-7258-5261-1 2025, **MDPI**. Edited by Nogueira, M.G., Kane, D.D.
- [10] **Chapter:** Sermet, Y. & Demir, I., 'A Semantic Web Framework for Automated Smart Assistants: A Case Study for Public Health'
Book: 'Knowledge Modelling and Learning through Cognitive Networks', ISBN: 9783036537788 2022, **MDPI**. Edited by Stella, M., Kenett, Y.N.
- [11] **Chapter:** Hu, A. & Demir, I., 'Real-time Flood Mapping on Client-side Web Systems using HAND model'
Book: 'Flood Early Warning and Risk Modelling', ISBN: 9783036537788 2022, **MDPI**. Edited by Iosub, M., & Enea, A.
- [12] **Chapter:** Sit, M.A., Koylu, C. & Demir, I., 'Identifying disaster-related tweets and their semantic, spatial and temporal context using deep learning, natural language processing and spatial analysis'
Book: 'Social Sensing and Big Data Computing for Disaster Management', ISBN: 9780367617653 2020, **Taylor & Francis**. Edited by Z. Li et al.
- [13] **Chapter:** Sermet, Y., Demir, I., 'Virtual and Augmented Reality Applications for Environmental Science Education and Training'
Book: 'New Perspectives on Virtual and Augmented Reality: Finding New Ways to Teach in a Transformed Learning Environment', ISBN: 9780367432119 2020, **Taylor & Francis**. Edited by L. Daniela
- [14] **Chapter:** Muste, M., Kim, D., Demir, I., 'Hydroinformatics Applied to Hydraulic Experiments',
Book: 'Experimental Hydraulics', Volume I. ISBN: 9780367573263 2017, **Taylor & Francis**. Edited by J. Aberle et al.

Patents

- [15] **Demir, I.,** Sermet, Y., 2024, Camera-Based Liquid Stage Measurement, US Patent No: US 12,169,126 B2. Date of Patent: Dec. 17, 2024

Journal Articles

Articles in Review (submitted to peer-reviewed journal)

- [16] Duran, E., Mermer, O., **Demir, I.**, 'Geospatial Impact Indexing of Agricultural Incidents: A Multi-Criteria Risk Assessment in the U.S. Midwest', *GeoJournal*.
- [17] Kadiyala, L.A., Sajja, R., Sermet, Y., **Demir, I.**, 'Semantic Density as Signal Amplification:

- Outperforming Supervised Learning in Fine-Grained Emotion Verification', *Transactions on Intelligent Systems and Technology*.
- [18] Mermer, O., Zhang, E., **Demir, I.**, 'Predicting Traffic Accident Injury Severity Using Ensemble Machine Learning Models: Incident Level and Generalized Insights via Explainable AI', *Engineering Research Express*.
- [19] Mermer, O., **Demir, I.**, 'The Evolution of Digital Twins in Hydrology and Environmental Science: From Physical Models to AI-Assisted Autonomous Systems', *Cambridge Prisms: Water*.
- [20] Pursnani, V., Sermet, Y., **Demir, I.**, 'HydroScholar AI: A Collaborative Agent for End-to-End Automated Hydrological Research Lifecycle', *Journal of Hydroinformatics*.
- [21] Mukarram, M.M.T., Waleed, M., Rukiya, Q.U., Linderman, M., **Demir, I.**, 'Prioritizing Agricultural Flood Mitigation: A GeoAI-Driven Assessment of Susceptibility, Crop Exposure, and Socioeconomic Vulnerability', *Journal of Flood Risk Management*.
- [22] Duran, E., Cikmaz, A.B., Mount, J., **Demir, I.**, 'Spatial Assessment of Urban Flood Vulnerability in Polk County, Iowa Using a Social–Ecological–Technological Framework', *Environment Systems and Decisions*.
- [23] Ames, D. P., Cohen, S., Clemins, P., **Demir, I.**, Halgren, J., Horsburgh, J. S., Nelson, E. J., Patel, A., Read, J. S., Swain, N., Tarboton, D. G., 'Bridging the Research-to-Operations Gaps in NOAA Water Prediction through Advances in Hydroinformatics', *Journal of the American Water Resources Association*.
- [24] Vald, G., Sermet, Y., **Demir, I.**, 'Scalable Micro-Credentials for AI Literacy in Healthcare: An AI-Assisted Framework for Expert-Led Education', *IEEE Access*.
- [25] Muste, M., Kim, K., Hauet, A., House, E., Meselhe, E., **Demir, I.**, 'HyGage: Solving the Hysteresis Puzzle with a New Streamflow Monitoring Method', *Advances in Water Resources*.
- [26] Mudiyansele, U.H., Mount, J., Sajja, R., Sermet, Y., **Demir, I.**, 'VRFIS: An Immersive Framework for Real-Time Flood Monitoring, Visualization, and Interactive Environmental Analysis', *Journal of Hydroinformatics*.
- [27] Rahmani, A., Sermet, Y., **Demir, I.**, 'HydroVerse Immersive Virtual Conference Environments with Metahuman AI: A New Paradigm for Interactive Scientific Research Communication and Engagement', *Virtual Reality*.
- [28] Gonzalez, E.L., Sajja, R., Sermet, Y., **Demir, I.**, 'FloodSim Sandbox: An Immersive Interactive Simulation Framework for Urban Flood Risk Management', *Water Science and Technology*.
- [29] Duran, E., Mount, E., **Demir, I.**, 'IBIS: A Community-Oriented Framework for Flood-Induced Bridge Vulnerability Assessment and Prioritization for Iowa', *Journal of Hydroinformatics*.
- [30] Mudiyansele, U.H., Sajja, R., Sermet, Y., **Demir, I.**, 'GIFIS: A Generalized Immersive Flood Information System Specification', *Environmental Modeling and Software*.
- [31] Sugiyama, K., Ramirez, C.E., **Demir, I.**, 'Community-Oriented Data Integration and Exploration Framework for Streamflow Forecast Models and Flood Inundation Map Products', *Environmental*

Modeling and Software.

- [32] Rahmani, A., Sermet, Y., **Demir, I.**, 'HydroVerse Education: An AI-Assisted Education Framework for Immersive Learning and Training Environments', *Journal of Hydroinformatics*.
- [33] Samadi, V., Panthi, K., Zafarmomen, N., Saberian, M., Neupane, A., Erazo, C., Adhikari, B., Castronova, A., **Demir, I.**, 'WaterSoftHack Cybertraining: Scaling Data Science, Machine Learning, and Cloud and Edge Computing Skills for Advancing Water Science Research and Collaboration'. *Hydrology and Earth System Sciences*.
- [34] Lu, C., Chen, X., Huang, H., Sarkar, A., **Demir, I.**, Jannesari, A., 'Event-Scale Flood Types and Their Controlling Mechanisms in Tile-Drained Agricultural Watersheds'. *Journal of Hydrology*.
- [35] Islam, S.M.S., **Demir, I.**, 'Web-Based Dynamic Flood Susceptibility Mapping Leveraging Fuzzy Logic for Interactive Analysis'. *Environmental Modeling and Software*.
- [36] Demiray, B.Z., **Demir, I.**, 'Unified Cross-Modal Learning for Hydrological Processes Using Multi-Task Transformer Framework', *Nature Scientific Reports*.
- [37] House, E., Meselhe, E., Sison, M., Dumars, R., Muste, M., **Demir, I.**, 'A Deep Learning Model for Streamflow Forecasting Inspired by Hysteretic Peak Phasing', *Journal of the American Water Resources Association*.
- [38] Rahmani, A., Sermet, Y., **Demir, I.**, 'HydroVerse VR Equipment Hub: An Integrated Virtual Reality Framework for Training and Workforce Development in Environmental Monitoring', *Environmental Modeling and Software*.
- [39] Demiray, B.Z., **Demir, I.**, 'Multi-Task Learning as a Step Toward Building General-Purpose Hydrological Forecasting Systems', *Water Practice and Technology*.
- [40] Demiray, B.Z., **Demir, I.**, 'Advancing Long-Horizon Hydrological Forecasting A Mamba-based Approach with Explainable AI for Generalized Streamflow Prediction', *Journal of Hydroinformatics*.
- [41] Erazo, C., **Demir, I.**, 'HydroBlox: AI-Assisted Visual Programming Framework for Enhanced Scientific Reproducibility in Hydrology', *Environmental Modeling and Software*.
- [42] Muste, M., Kim, K., Kim, D., **Demir, I.**, 'Comparative Analysis of the Stage-Discharge Rating Operated in Spatiotemporal Gradually Varied Flows with Alternative Streamflow Monitoring Approaches', *Water Resources Research*.
- [43] Sajja, R., Sermet, Y., **Demir, I.**, 'An Open-Source Dual-Loss Embedding Model for Semantic Retrieval in Higher Education', *Discover Education*.
- [44] Mukarram, M.M.T., Rukiya, Q.U., **Demir, I.**, 'GeoAI-based Urban Environmental Forecasting: A Remote Sensing Driven Hybrid Deep Learning and Machine Learning Framework', *Environmental Monitoring and Assessment*.
- [45] Duran, E., Mount, J., **Demir, I.**, 'Comprehensive Flood Impact Assessment for Iowa Bridge Infrastructure Using Integrated AHP and Fuzzy AHP Analysis', *Resilient Cities and Structures*.
- [46] Islam, S.M.S., **Demir, I.**, 'Comparative Analysis of Flood Risk Zoning and Susceptibility Assessment

- for the Western Corn Belt Plains using Geospatial Techniques'. *Journal of Environmental Management*.
- [47] Kadiyala, L.A., Sajja, R., Sermet, Y., **Demir, I.**, 'Enhancing Collective Intelligence in Large Language Models Through Emotional Integration', *Cognitive Computation*.
 - [48] Pursnani, V., Erazo, C., Sermet, Y., and **Demir, I.**, 'HydroSuite-AI: Facilitating Hydrological Research with LLM-Driven Code Assistance'. *Earth Science Informatics*.
 - [49] Demiray, B.Z. and **Demir, I.**, 'Towards Generalized Hydrological Forecasting using Transformer Models for 120-Hour Streamflow Prediction', *Machine Learning: Earth*.
 - [50] Erazo, C., Song, K., **Demir, I.**, 'The State of Hydroinformatics Prior to Generative AI Establishing a Quantitative Baseline (2018–2023)', *Environmental Modeling and Software*.
 - [51] Sit, M., Demiray, B.Z. and **Demir, I.**, 'Spatial Downscaling of Streamflow Data with Attention Based Spatio-Temporal Graph Convolutional Networks', *Nature Scientific Reports*.
 - [52] Akhlaghi, V.E., Campbell, A.M. and **Demir, I.**, 'The Flood Mitigation Problem in a Road Network'. *Production and Operations Management*.
 - [53] Xiang, Z., **Demir, I.**, 'Real-Time Streamflow Forecasting Framework, Implementation and Post-Analysis Using Deep Learning'. *Geophysical Research Letters*.
 - [54] Xiang, Z., **Demir, I.**, 'Fully distributed rainfall-runoff modeling using spatial-temporal graph neural network'. *Water Resources Research*.
 - [55] Xiang, Z., **Demir, I.**, Mantilla, R., Krajewski, W.F., 'A Regional Semi-Distributed Streamflow Model Using Deep Learning'. *Journal of Hydrology*.

2026 (published/in press)

- [56] House, E., Meselhe, E., Muste, M., Kim, K., **Demir, I.**, 'A Sensitivity Analysis Approach to Identifying Drivers of Streamflow Hysteresis', *Journal of the American Water Resources Association*, 2026.
- [57] Mermer, O., Zhang, E., and **Demir, I.**, 'Explainable Ensemble Machine Learning for Predicting Injury Severity in Agricultural Accidents', *Journal of Agromedicine*, 2026.
- [58] Islam, S.M.S., Cwierny, D.M., **Demir, I.**, 'Trends in Nitrate Levels in Iowa's Community Water Systems (2000-2022): Characteristics of Systems Vulnerable to MCL Exceedances and Future Regulatory Scenarios'. *Journal of Environmental Quality*, 55, e70189, 2026.
- [59] Islam, S.M.S., Mount, J., **Demir, I.**, 'Decoding Drought-Yield Relationships in the U.S. Midwest: A Multiscale Analysis Using Climatic Indicators and Random Forests'. *European Journal of Agronomy*, 177, 128088, 2026.
- [60] Islam, S.M.S., **Demir, I.**, 'A Novel Methodology for Enhancing Flood Risk Communication: The Nines of Safety'. *Cambridge Prisms: Water*, 4, e8, 2026.
- [61] Vald, G., Sermet, Y., Mount, J., Shrestha, S., Samuel, D.J., Cwierny, D.M., **Demir, I.**, 'A Novel Intelligent Expert System for Exploring Water Quality Data', *Water Science and Technology*, 93

(4), 411–427, 2026.

- [62] Sajja, R., Sermet, Y., **Demir, I.**, ‘Evaluating Artificial Intelligence Assisted Nursing Education: Student Perceptions, Ethical Concerns, and Pedagogical Implications’, *Teaching and Learning in Nursing*, 21 (2), 146-154, 2026.
- [63] Oldham, S. J., Wagle, P., Nelson, E. J., Hales, R. C., Hotchkiss, R. H., Ames, D. P., **Demir, I.**, Sufi, M., Prince, L., Larco, K., Miskin, T., ‘Integrating Modeled Flood Maps from the National Water Model and Diverse Sources for Enhanced Forecasting and Preparedness’, *Journal of the American Water Resources Association*, 62, e70107, 2026.
- [64] Li, Z., Demiray, B.Z., Muste, M., and **Demir, I.**, ‘An Integrated Framework for Actionable Flood Warnings Using High Resolution Satellite Imagery’, *Journal of Hydroinformatics*, 28 (2), 196-210, 2026.
- [65] Sajja, R., Sermet, Y., Fodale, B., **Demir, I.**, ‘Evaluating AI-powered Learning Assistants in Engineering Higher Education with Implications for Student Engagement, Ethics, and Policy’, *Nature Scientific Reports*, 16, 7565, 2026.
- [66] Baydaroglu, O., Yeşilköy, S., and **Demir, I.**, ‘Linking Drought Indicators and Crop Yields through Causality and Information Transfer: A Phenology-Based Analysis’, *Nature Scientific Reports*, 16, 2373, 2026.
- [67] Duran, E., **Demir, I.**, ‘Enhancing the Resilience of Wind Energy Infrastructure in Iowa Flood Risk Assessment and Site Suitability Analysis for Critical Infrastructure Protection’, *International Journal of Disaster Risk Reduction*, 133, 106003, 2026.
- [68] Mermer, O., Liu, Y., Jennissen, C.A., Sonka, M., **Demir, I.**, ‘Agricultural Injury Severity Prediction Using Integrated Data-Driven Analysis: Global Versus Local Explainability Using SHAP’, *Safety*, 12(1), 6, 2026. **[selected as journal cover]**
- [69] Islam, S.M.S., Fatematozzohora, M., **Demir, I.**, ‘Regional Variability of Drought-Crop Sensitivities Across Iowa Using Unsupervised Learning’. *Irrigation Science*, 44, 32, 2026.
- [70] Satilmis, U., Mount, J., Bayram, A., **Demir, I.**, ‘Comprehensive Assessment of Flood Risk and Community Impact of Concentrated Animal Feeding Operations in Iowa’, *Environmental Research Letters*, 21, 014029, 2026.
- [71] Sajja, R., Mermer, O., Sermet, Y., **Demir, I.**, ‘Hydro3DJS: A Modular Web-Based Library for Real-Time 3D Visualization of Watershed Dynamics and Digital Twin Integration’, *Environmental Modeling and Software*, 197, 106853, 2026.
- [72] Hosseini, S.H., Zolghadr-Asli, B., Tenkanen, H., Madani, K., Matin, M.A., **Demir, I.**, Ostfeld, A., Singh, V.P., Savic, D., ‘Making Waves: A Conceptual Framework Exploring How LLM-Based Multi-Agent Systems Could Reshape Water Engineering’, *Water Research*, 291, 125157, 2026.
- [73] Erazo, C., **Demir, I.**, ‘AI-Assisted Voice Enabled Computing Framework for Hydrological Analysis’, *Environmental Modeling and Software*, 197, 106833, 2026.

- [74] Najafzadeh, M., Basirian, S., **Demir, I.**, 'Water Quality Monitoring for Coastal Hypoxia: Integration of Satellite Imagery and Machine Learning Models', *Marine Pollution Bulletin*, 222 (2), 118735, 2026.

2025 (published/in press)

- [75] Sajja, R., Sermet, Y., **Demir, I.**, 'Domain-Specific Embedding Models for Hydrology and Environmental Sciences: Enhancing Semantic Retrieval and Question Answering', *Water Science & Technology*, 92 (9), 1328–1342, 2025.
- [76] Vald, G., Samuel, D.J., Sermet, Y., Mount, J., Cwiertny, D.M., **Demir, I.**, 'Application of Large Language Models in Developing Conversational Agents for Water Quality Education, Communication and Operations', *Water Science and Technology*, 20 (10), 2094–2109, 2025.
- [77] Kizilkaya, D., Sermet, Y., **Demir, I.**, 'Towards HydroLLM: Approaches for Building a Domain-Specific Language Model for Hydrology', *Journal of Hydroinformatics*, 27 (10), 1652–1666, 2025.
- [78] Sajja, R., Sermet, Y., Cwiertny, D.M., and **Demir, I.**, 'Integrating AI and Learning Analytics for Data-Driven Pedagogical Decisions and Personalized Interventions in Education'. *Technology, Knowledge and Learning*, 1-31, 2025.
- [79] Kaynak, S., Kaynak, B., Mermer, O., and **Demir, I.**, 'City-scale Digital Twin Framework for Flood Impact Analysis: Integrating Urban Infrastructure and Real-Time Data Analytics', *Urban Climate*, 64, 102640, 2025.
- [80] Sajja, R., Xiong, X., Mermer, O., Sermet, Y., **Demir, I.**, 'A Bibliometric Overview of Conversational AI in Hydrology and Environmental Sciences', *Information Geography*, 1 (2), 2025.
- [81] Emiroglu, E., Grant, C.A., Sermet, Y., and **Demir, I.**, 'Floodcraft: Game-based Interactive Learning Environment using Minecraft for Flood Mitigation for K-12 Education', *International Journal of Disaster Risk Reduction*, 130, 105799, 2025.
- [82] Herkert, N., Demiray, B.Z., Demir, I., Martinez, A., Hornbuckle, K.C., 'Web-Based Data Analytics Framework for Polyurethane Foam Passive Air Sampling Rate and Effective Volume', *Environmental Engineering Science*, 42:9, 370-380, 2025.
- [83] House, E., Meselhe, E., Muste, M., **Demir, I.**, 'Streamflow Hysteresis Analysis through a Deep-Dive Budget of the St Venant Equation Momentum Terms', *Water Resources Research*, 61, 8, 2025.
- [84] Alabbad, Y., Cikmaz, A.B., Yildirim, E., **Demir, I.**, 'Flood Exposure Assessment of Railway Infrastructure: A Case Study for Iowa', *Applied Sciences*, 15 (16), 899, 2025.
- [85] Kadiyala, L.A., Sajja, R., Sermet, Y., Muste, M., **Demir, I.**, 'AI-Driven Decision-Making for Water Resources Planning and Hazard Mitigation Using Automated Multi Agents', *Journal of Hydroinformatics*, 27, 1217-1237, 2025.
- [86] Sufi, M., Erazo, C., **Demir, I.**, 'HydroLang FRAM: Web-Based Framework for Comprehensive Flood Risk and Mitigation Assessment and Communication'. *International Journal of Disaster Risk Reduction*, 128, 105735, 2025.

- [87] Vald, G., Sermet, Y., Chi, N.C., **Demir, I.**, 'AI-Powered Nursing Handoffs: Introducing and Evaluating the Patient Report Template', *Learning Health Systems*, e70026, 2025.
- [88] Baydaroglu, O., Yeşilköy, S., Dave, A., Linderman, M., and **Demir, I.**, 'Modeling Algal Toxin Dynamics and Integrated Web Framework for Lakes', *Toxins*, 17 (7), 338, 2025.
- [89] House, E., Kyeongdong, K., Muste, M., Meselhe, E., **Demir, I.**, 'Back to Basics: On the Proper Determination of Free-Surface Slope (FSS) in Gradually-Varied Open Channel Flows', *Flow Measurement and Instrumentation*, 106, 102979, 2025.
- [90] Alabbad, Y., **Demir, I.**, 'Understanding Flood Risk in Public Transit Systems: Insights from Accessibility and Vulnerability Analysis in Iowa'. *International Journal of Disaster Risk Reduction*, 126, 105615, 2025.
- [91] Kizilkaya, D., Sajja, R., Sermet, Y., **Demir, I.**, 'Towards HydroLLM: A Benchmark Dataset for Hydrology-Specific Knowledge Assessment for Large Language Models', *Environmental Data Science*, 4, e31, 2025.
- [92] Mermer, O., Zhang, E., and **Demir, I.**, 'A Comparative Study of Ensemble Machine Learning and Explainable AI for Predicting Harmful Algal Blooms', *Big Data and Cognitive Computing*, 9 (5), 138, 2025. **[selected as journal cover]**
- [93] Mudiyanse, U.H., Gonzalez, E.L., Sermet, Y., **Demir, I.**, 'An Immersive Hydroinformatics Framework with Extended Reality for Enhanced Visualization and Simulation of Hydrologic Data', *Applied Sciences*, 15 (10), 5278, 2025.
- [94] Mermer, O., and **Demir, I.**, 'Multivariate Regression Analysis for Identifying Key Drivers of Harmful Algal Bloom in Lake Erie', *Applied Sciences*, 15 (9), 4824, 2025.
- [95] Pursnani, V., Sermet, Y., and **Demir, I.**, 'A Conversational Intelligent Assistant for Enhanced Operational Support in Floodplain Management with Multimodal Data'. *International Journal of Disaster Risk Reduction*, 122, 105422, 2025.
- [96] Shrestha, S., Mount, J., Vald, G., Sermet, Y., Samuel, D.J., Bryant, C., Peralta, A.C., Beck, M.W., Meyers, S.D., Muller-Karger, F.E., Cwierty, D.M., **Demir, I.**, 'A Community-Centric Intelligent Cyberinfrastructure for Addressing Nitrogen Pollution using Web Systems and Conversational AI', *Environmental Science and Policy*, 167, 104055, 2025.
- [97] Sajja, R., Sermet, Y., and **Demir, I.**, 'End-to-End Deployment of the Educational AI Hub for Personalized Learning and Engagement: A Case Study on Environmental Science Education'. *IEEE Access*, 13, 55169-55186, 2025.
- [98] Demiray, B.Z., Mermer, O., Baydaroglu, O., and **Demir, I.**, 'Predicting Harmful Algal Blooms Using Explainable Deep Learning Models: A Comparative Study', *Water*, 17(5), 676, 2025. **[most viewed paper in 2025]**
- [99] Abrar, M., Sermet, Y., **Demir, I.**, 'An Empirical Evaluation of Large Language Models on Consumer Health Questions', *BioMedInformatics*, 5(1), 12, 2025.
- [100] Demiray, B.Z., Sermet, Y., Yildirim, E., **Demir, I.**, 'FloodGame: An Interactive 3D Serious Game on

- Flood Mitigation for Disaster Awareness and Education’. *Environmental Modeling and Software*, 188, 106418, 2025.
- [101] Kaynak, B., Mermer, O., Sermet, Y., **Demir, I.**, ‘HydroSignal: Open-Source Internet of Things Information Communication Platform for Hydrological Education and Outreach’, *Environmental Monitoring and Assessment*, 197(4), 1-21, 2025.
- [102] Sajja, R., Pursnani, V., Sermet, Y., and **Demir, I.**, ‘AI-Assisted Educational Framework for Floodplain Manager Certification: Enhancing Vocational Education and Training Through Personalized Learning’. *IEEE Access*, 13, 42401-42413, 2025.
- [103] Kaynak, S., Kaynak, B., Erazo, C., **Demir, I.**, ‘Geo-WC: Custom Web Components for Earth Science Organizations and Agencies’, *Environmental Modeling and Software*, 185, 106328, 2025.
- [104] Duran, E., Alabbad, Y., Mount, J., Yildirim, E., and **Demir, I.**, ‘Comprehensive Analysis of Riverine Flood Impact on Bridge and Transportation Network: Iowa Case Study’, *International Journal of River Basin Management*, 1–14, 2025.
- [105] Cox, A., Muste, M., Merwade, V., **Demir, I.**, Minear, J.T., Dey, S., Liang, C.Y. and Sermet, Y., ‘Engaging the Earth Science and Engineering Communities in Developing a River Morphology Information System (RIMORPHIS)’, *Journal of the American Water Resources Association*, 61 (1), e13252, 2025.
- [106] Li, Z., Sermet, Y., **Demir, I.**, ‘EarthObsNet: A Comprehensive Benchmark Dataset for Data-Driven Earth Observation Image Synthesis’, *Environmental Modeling and Software*, 185, 106292, 2025.
- [107] Merwade, V., **Demir, I.**, Muste, M., Cox, A.L., Minear, J.T., Sermet, Y., Dey, S., Liang, C., ‘Towards an Open and Integrated Cyberinfrastructure for River Morphology Research in the Big Data Era’. *Environmental Modeling and Software*, 183, 106240, 2025.
- [108] Sermet, Y., Liang, C.Y., Dey, S., Muste, M., Merwade, V., Cox, A., Minear, J.T., **Demir, I.**, ‘River Morphology Information System: A Web Cyberinfrastructure for Advancing River Morphology Research’, *Environmental Modeling and Software*, 183, 106222, 2025.
- [109] Chi, N. C., Nguyen, K., Shanahan, A., **Demir, I.**, Fu, Y. K., Chi, C. L., Perkhounkova, Y., Hein, M., Buckwalter, K., Wolf, M., Walliams, L., Herr, K., ‘Usability Testing of the PACE-App to Support Family Caregivers in Managing Pain for People with Dementia’. *The Gerontologist*, 65(2), gnae163, 2025.

2024

- [110] Sajja, R., Erazo, C., Li, Z., Demiray, B.Z., Sermet, Y., and **Demir, I.**, ‘Integrating Generative AI in Hackathons: Opportunities, Challenges, and Educational Implications’. *Big Data and Cognitive Computing*, 8 (12), 188, 2024.
- [111] Yeşilköy, S., Baydaroglu, O., Singh, N., Sermet, Y., and **Demir, I.**, ‘A Contemporary Systematic Review of Cyberinfrastructure Systems and Applications for Flood and Drought Data Analytics and Communication’, *Environmental Research Communications*, 6, 102003, 2024.
- [112] Sajja, R., Sermet, Y., Cikmaz, M., Cwierny, D.M., and **Demir, I.**, ‘Artificial Intelligence-Enabled

- Intelligent Assistant for Personalized and Adaptive Learning in Higher Education’. *Information*, 15 (10), 596, 2024.
- [113] Grant, C.A., Alabbad, Y., Yildirim, E., and **Demir, I.**, ‘Comprehensive Assessment of Flood Risk and Vulnerability for Essential Facilities: Iowa Case Study’, *Urban Science*, 8(3), 145, 2024.
- [114] Kadiyala, L.A., Mermer, O., Samuel, D.J., Sermet, Y., **Demir, I.**, ‘The Implementation of Multimodal Large Language Models for Hydrological Applications: A Comparative Study of GPT-4 Vision, Gemini, LLaVa, and Multimodal-GPT’, *Hydrology*, 11(9), 148, 2024. [Editor’s Choice]
- [115] Baydaroğlu, O., Muste, M., Cikmaz, A.B., Kim, K., Meselhe, E., **Demir, I.**, ‘Testing Protocols for Smoothing Datasets of Hydraulic Variables Acquired during Unsteady Flows’, *Hydrological Sciences Journal*, 1-18, 2024.
- [116] Mount, J., Sermet, Y., Jones, C. S., Schilling, K., Gassman, P. W., Weber, L. J., Krajewski, W. F., **Demir, I.**, ‘An Integrated Cyberinfrastructure System for Water Quality Resources in the Upper Mississippi River Basin’, *Journal of Hydroinformatics*, 26 (8): 1970–1988, 2024.
- [117] Samuel, D.J., Sermet, Y., Cwiertny, D.M., **Demir, I.**, ‘Integrating Vision-Based AI and Large Language Models for Real-Time Water Pollution Surveillance’, *Water Environment Research*, 96(8), e11092, 2024.
- [118] Botero-Acosta, A., Cox, A.L., Sagan, V., **Demir, I.**, Muste, M., Paul Boyd, P., Pathak, C., ‘Multivariate Analysis and Anomaly Detection of U.S. Reservoir Sedimentation Dataset’, *Journal of Hydrologic Engineering*, 29, 5, 2024.
- [119] Yeşilköy, S., Baydaroglu, O., **Demir, I.**, ‘Is Snow Drought a Messenger for the Upcoming Severe Drought Period? A Case Study in the Upper Mississippi River Basin’. *Atmospheric Research*, 309, 107553, 2024.
- [120] Yeşilköy, S., **Demir, I.**, ‘Crop Yield Prediction based on Reanalysis and Crop Phenology Data in the Agroclimatic Zones’. *Theoretical and Applied Climatology*, 1-14, 2024.
- [121] Alabbad, Y. and **Demir, I.**, ‘Geo-Spatial Analysis of Built-Environment Exposure to Flooding: Iowa Case Study’, *Discover Water*, 4 (1), 28, 2024.
- [122] Erazo, C., Sermet, Y., **Demir, I.**, ‘HydroRTC: A Web-Based Data Transfer and Communication Library for Collaborative Data Processing and Sharing in the Hydrological Domain’, *Environmental Modeling and Software*, 178, 106068, 2024.
- [123] Demiray, B.Z., Sit, M.A., Mermer, O., **Demir, I.**, ‘Enhancing hydrological modeling with transformers: a case study for 24-h streamflow prediction’. *Water Science & Technology*, 89(9), 2326-2341, 2024.
- [124] Cox, A.L., Meyer, D., Botero-Acosta, A., Sagan, V., **Demir, I.**, Muste, M., Paul Boyd, P., Pathak, C., ‘Estimating Reservoir Sedimentation Using Deep Learning’, *Journal of Hydrologic Engineering*, 29 (4), 2024.
- [125] Baydaroglu, O., and **Demir, I.**, ‘Temporal and Spatial Satellite Data Augmentation for Deep Learning-Based Rainfall Nowcasting’, *Journal of Hydroinformatics*, 26, 3, 589, 2024.

- [126] Li, Z., **Demir, I.**, ‘MultiRS Flood Mapper: A Google Earth Engine Application for Water Extent Mapping with Multimodal Remote Sensing and Quantile-Based Postprocessing’, *Environmental Modeling and Software*, 176, 106022, 2024.
- [127] Sit, M., Seo, B.C., Demiray, B.Z. and **Demir, I.**, ‘EfficientRainNet: Leveraging EfficientNetV2 for Memory-Efficient Rainfall Nowcasting’, *Environmental Modeling and Software*, 176, 106001, 2024.
- [128] Satilmisoglu, T.K., Sermet, Y. and **Demir, I.**, ‘Blockchain Opportunities for Water Resources Management: A Comprehensive Review’, *Sustainability*, 16, 2403, 2024.
- [129] Erazo, C., Sermet, Y., **Demir, I.**, ‘HydroCompute: An Open-Source Web-Based Computational Library for Hydrology and Environmental Sciences’. *Environmental Modeling and Software*, 175, 106005, 2024.
- [130] Alabbad, Y., Mount, J., Campbell, A. M., and **Demir, I.**, ‘A Web-based Decision Support Framework for Optimizing Road Network Accessibility and Emergency Facility Allocation During Flooding’, *Urban Informatics*, 3(1), 1-17, 2024.
- [131] Islam, S.M.S., Yeşilköy, S., Baydaroglu, O., Yildirim, E., and **Demir, I.**, ‘State-Level Multidimensional Agricultural Drought Susceptibility and Risk Assessment for Agriculturally Prominent Areas’. *International Journal of River Basin Management*, 1-18, 2024.
- [132] Ewing, G.J., Erazo, C., Vaidya, A. and **Demir, I.**, ‘Client-side Web-based Model Coupling using Basic Model Interface for Hydrology and Water Resources’, *Journal of Hydroinformatics*, 26 (2): 494–502, 2024.
- [133] Li, Z., **Demir, I.**, ‘Flood Sequence Mapping with Multimodal Remote Sensing Under the Influence of Dense Vegetation’, *International Journal of Remote Sensing*, 45:4, 1059-1078, 2024.
- [134] Li, Z., **Demir, I.**, ‘Better Localized Predictions with Out-of-Scope Information and Explainable AI: One-Shot SAR Backscatter Nowcast Framework with Data from Neighboring Region’, *ISPRS Journal of Photogrammetry and Remote Sensing*, 207, 92-103, 2024.
- [135] Tanir, T., Yildirim, Y., Ferreira, C., and **Demir, I.**, ‘Social Vulnerability and Climate Risk Assessment for Agricultural Communities in the United States’, *Science of Total Environment*, 908, 168346, 2024.

2023

- [136] Gourbesville, P., Freni, G., Demir, I., Navarro, P. G., Lin, G. F., Boxall, J., Brentan, B. M., Nguyen, V. T. V., Tassi, P., Hinkelman, R., Di Cristo, C., Laucelli, D., Berardi, L., Menapace, A., Meniconi, S., Nohara, D., Rokstad, M., Gilewski, P., Georgescu, S. C., Makropoulos, C., Delestre, O., Kuo, H., Abily, M., Zyl, J. V., Popescu, I., Qiang, M., Nguyen, V. T., Liu, D., Jang, D., Shrestha, S., & Duong, V. N., ‘Why Digital Water – Knowledge Application & Hydroinformatics?’, *Digital Water (TDWA)*, 1:1, 2023.
- [137] Pursnani, V., Sermet, Y., and **Demir, I.**, ‘Performance of ChatGPT on the US Fundamentals of Engineering Exam: Comprehensive Assessment of Proficiency and Potential Implications for

- Professional Environmental Engineering Practice'. *Computers and Education: Artificial Intelligence*, 5, 100183, 2023.
- [138] Li, Z., Xiang, Z., Demiray, B.Z., Sit, M. and **Demir, I.**, 'MA-SARNet: A One-Shot Nowcasting Framework for SAR Image Prediction with Physical Driving Forces'. *ISPRS Journal of Photogrammetry and Remote Sensing*, 205, 176-190, 2023.
- [139] Yildirim, E., Alabbad, Y. and **Demir, I.**, 'Non-structural Flood Mitigation Optimization at Community Scale: Middle Cedar Case Study', *Journal of Environmental Management*, 346, 119025, 2023.
- [140] Yeşilköy, O.B., Yeşilköy, S., Sermet, Y., **Demir, I.**, 'A Comprehensive Review of Ontologies in the Hydrology Towards Guiding Next Generation Artificial Intelligence Applications'. *Journal of Environmental Informatics*, 42, 2, p90-107, 2023.
- [141] Sajja, R., Sermet, Y., Cwiertny, D.M., and **Demir, I.**, 'Platform-Independent and Curriculum-Oriented Intelligent Assistant for Higher Education'. *International Journal of Educational Technology in Higher Education*, 20, 42, 2023.
- [142] Nourani, V., Baghanam, A.H., Khodkar, K., Shahli, A., **Demir, I.**, 'Uncertainty quantification of GCM based climatic parameter downscaling via deep learning network', *Climate Dynamics*, 62(9), 1223-1242, 2023.
- [143] Cikmaz, A.B., Yildirim, E., **Demir, I.**, 'Flood Susceptibility Mapping using Fuzzy Analytical Hierarchy Process for Cedar Rapids, Iowa'. *International Journal of Disaster Risk Reduction*, 20, 42, 2023.
- [144] Erazo, C., Sermet, Y., **Demir, I.**, 'HydroLang Markup Language: Community-Driven Web Components for Hydrological Analyses'. *Journal of Hydroinformatics*, 25 (4), 1171-1187, 2023.
- [145] Shahid, M., Sermet, Y., **Demir, I.**, 'Towards Progressive Geospatial Information Processing on Web Systems: A Case Study for Watershed Analysis in Iowa'. *Earth Science Informatics*, 1-14, 2023.
- [146] Sit, M., Seo, B.C. and **Demir, I.**, 'TempNet – Temporal Super Resolution of Radar Rainfall Products with Residual CNNs'. *Journal of Hydroinformatics*. 25(2), pp.552-566, 2023.
- [147] Sermet, Y., **Demir, I.**, 'Camera-Based Intelligent Stream Stage Sensing for Decentralized Environmental Monitoring'. *Science of the Total Environment*, 25(2), pp.163-173, 2023.
- [148] Alabbad, Y., Yildirim, E. and **Demir, I.**, 'A Web-based Analytical Urban Flood Damage and Loss Estimation Framework', *Environmental Modelling & Software*, 105670, 2023.
- [149] Sit, M.A., **Demir, I.**, 'Democratizing Deep Learning Applications in Earth and Climate Sciences on the Web: EarthAIHub'. *Applied Sciences*, 13(5), 3185, 2023.
- [150] Zhang, M., Zhu, L., Lin, S.-Y., Herr, K., Chi, C.-L., **Demir, I.**, Lopez D. K., Chi, N.-C. 'Using Artificial Intelligence to Improve Pain Assessment and Pain Management: A Systematic Review'. *Journal of the American Medical Informatics Association*, 30, no. 3, 570-587, 2023.
- [151] Li, Z. and **Demir, I.**, 'U-net-based semantic classification for flood extent extraction using SAR imagery and GEE platform: A case study for 2019 central US flooding'. *Science of The Total Environment*, 869, p.161757, 2023.

- [152] Granata, F., Di Nunno, F., Najafzadeh, M. and **Demir, I.**, 'A Stacked Machine Learning Algorithm for Multi-Step Ahead Prediction of Soil Moisture'. *Hydrology*, 10(1), p1, 2023. **[selected as journal cover]**
- [153] Li, Z., Duque, F.Q., Grout, T., Bates, B., **Demir, I.**, 'Comparative Analysis of Performance and Mechanisms of Flood Inundation Map Generation using Height Above Nearest Drainage'. *Environmental Modelling & Software*, 159, 105565, 2023.

2022

- [154] **Demir, I.**, Sermet, Y., & Rink, K. 'Next generation visualization and communication systems for earth science using immersive reality and serious gaming'. *Frontiers in Earth Science*, 10, 2022.
- [155] **Demir, I.**, Xiang, Z., Demiray, B.Z., Sit, M.A., 'WaterBench-Iowa: a large-scale benchmark dataset for data-driven streamflow forecasting'. *Earth System Science Data*, 14(12), 5605-5616, 2022.
- [156] Ewing, G., Mantilla, R., Krajewski, W.F., **Demir, I.**, 'Interactive hydrological modelling and simulation on client-side web systems: an educational case study'. *Journal of Hydroinformatics*, 24(6), pp.1194-1206, 2022.
- [157] Erazo, C., Sermet, Y., Molkenhuth, F., **Demir, I.**, 'HydroLang: An Open-Source Web-Based Programming Framework for Hydrological Sciences'. *Environmental Modeling and Software*, 157, 105525, 2022.
- [158] Yildirim, E., **Demir, I.**, 'Flood Risk Assessment and Quantification at the Community and Property Level in the State of Iowa', *International Journal of Disaster Risk Reduction*, 77, 103106, 2022.
- [159] Xiang, Z., **Demir, I.**, 'Flood Markup Language—A Standards-based Exchange Language for Flood Risk Communication'. *Environmental Modeling and Software*, 152, 105397, 2022.
- [160] Alabbad, Y., **Demir, I.**, 'Comprehensive flood vulnerability analysis in urban communities: Iowa case study'. *International Journal of Disaster Risk Reduction*, 74, 102955, 2022.
- [161] Li, Z., **Demir, I.**, 'A comprehensive web-based system for flood inundation map generation and comparative analysis based on height above nearest drainage'. *Science of the Total Environment*, 828, 154420, 2022.
- [162] Yildirim, E., **Demir, I.**, 'Agricultural flood vulnerability assessment and risk quantification in Iowa', *Science of the Total Environment*, 826, 154165, 2022.
- [163] Gautam, A., Sit, M.A., **Demir, I.**, 'Realistic River Image Synthesis using Deep Generative Adversarial Networks', *Frontiers in Water*, 4, 784441, 2022.
- [164] Li, Z., Mount, J., **Demir, I.**, 'Accounting for uncertainty in real-time flood inundation mapping using HAND model: Iowa case study'. *Natural Hazards*, 112(1), 977-1004, 2022.
- [165] Sermet, Y., **Demir, I.**, 'GeospatialVR: A Web-based Virtual Reality Framework for Collaborative Environmental Simulations'. *Computers and Geosciences*, Volume 159, 105010, 2022.
- [166] Alabbad, Y., Yildirim, E., **Demir, I.**, 'Flood Mitigation Data Analytics and Decision Support Framework: Iowa Middle Cedar Watershed Case Study', *Science of the Total Environment*, Volume 814, 152768, 2022.

2021

- [167] Krajewski, W.F., Ghimire, G. R., **Demir, I.**, Mantilla, R., 'Real-Time Streamflow Forecasting: AI vs. Hydrologic Insights'. *Journal of Hydrology X*, Volume 13, 100110, 2021.
- [168] Sermet, Y., **Demir, I.**, 'A Semantic Web Framework for Automated Smart Assistants: A Case Study for Public Health', *Big Data and Cognitive Computing*, 5 (4), 57, 2021.
- [169] Alabbad, Y., Mount, J., Campbell, A. M., **Demir, I.**, 'Assessment of transportation system disruption and accessibility to critical amenities during flooding: Iowa case study', *Science of Total Environment*, 793, 148476, 2021.
- [170] Yildirim, E., **Demir, I.**, 'An Integrated Flood Risk Assessment and Mitigation Framework: A Case Study for Middle Cedar River Basin, Iowa, US', *International Journal of Disaster Risk Reduction*, 56, 102113, 2021.
- [171] Hu, A., Demir, I., 'Real-time Flood Mapping on Client-side Web Systems using HAND model'. *Hydrology*, 8 (2), 65, 2021.
- [172] Ewing, G., **Demir, I.**, 'An Ethical Decision-Making Framework with Serious Gaming: A Smart Water Case Study on Flooding'. *Journal of Hydroinformatics*, 23 (3), 466-482, 2021.
- [173] Haltas, I., Yildirim, E., Oztas, F., **Demir, I.**, 'A Comprehensive Flood Event Specification and Inventory: 1930-2020 Turkey Case Study', *International Journal of Disaster Risk Reduction*, 56, 102086, 2021.
- [174] Sit, M.A., Langel, R.J., Thompson, D., Cwiertny, D.M., **Demir, I.**, 'Web-based Data Analytics Framework for Well Forecasting and Groundwater Quality'. *Science of the Total Environment*, 761, 144121, 2021.
- [175] Demiray, B.Z., Sit, M. **Demir, I.**, 'D-SRGAN: DEM Super-Resolution with Generative Adversarial Networks', *SN Computer Science*, Springer, 2(1), 1-11, 2021.
- [176] Teague, A., Sermet, Y., **Demir, I.**, Muste, M., 'A Collaborative Serious Game for Water Resources Planning and Hazard Mitigation'. *International Journal of Disaster Risk Reduction*, 53, 101977, 2021.

2020

- [177] Sit, M.A., Demiray, B.Z., Xiang, Z., Ewing, G., Sermet, Y., **Demir, I.**, 'A Comprehensive Review of Deep Learning Applications in Hydrology and Water Resources'. *Water Science & Technology*, 2020.
- [178] Xiang, Z., **Demir, I.**, 'Long-term Station-Level Hourly Rainfall-Runoff Modeling using Deep Learning - A Case Study for State of Iowa', *Environmental Modeling and Software*, p.104761, 2020.
- [179] Sermet, Y., **Demir, I.**, Muste, M., 'A Serious Gaming Framework for Decision Support on Hydrological Hazards', *Science of The Total Environment*, p.138895, 2020.
- [180] Xiang, Z., Yan, J., **Demir, I.**, 'A Rainfall-Runoff Model with LSTM-based Sequence-to-Sequence Learning', *Water Resources Research*, 56 (1), 2020.

-
- [181] Agliamzanov, R., Sit, M.A., **Demir, I.**, 'Hydrology@Home – A Distributed Volunteer Computing Framework for Hydrological Research and Applications', *Journal of Hydroinformatics*, 22 (2): 235–248, 2020.
 - [182] Sermet, Y., Villanueva, P., Sit, M. A., **Demir, I.**, 'Crowdsourced approaches for stage measurements at ungauged locations using smartphones', *Hydrological Sciences Journal*, 65 (5), 813-822, 2020.
 - [183] Xu, H., Windsor, M., Muste, M., **Demir, I.**, 'A Web-Based Decision Support System for Collaborative Mitigation of Multiple Water-Related Hazards Using Serious Gaming', *Journal of Environmental Management*, 255, 109887, 2020.
-

2019

- [184] Sermet, Y., **Demir, I.**, 'Towards an Information Centric Flood Ontology for Information Management and Communication', *Earth Science Informatics*, 12 (4), 541-551, 2019.
 - [185] Xu, H., Muste, M., **Demir, I.**, 'Web-based Geospatial Platform for Analysis and Forecasting of Sedimentation at Culverts', *Journal of Hydroinformatics*, 21:6, 1064-1081, 2019.
 - [186] Sit, M.A., Koylu, C., **Demir, I.**, 'Identifying disaster-related tweets and their semantic, spatial and temporal context using deep learning, natural language processing and spatial analysis: a case study of Hurricane Irma', *International Journal of Digital Earth*, 12:11, 1205-1229, 2019.
 - [187] Yildirim, E., **Demir, I.**, 'An Integrated Web Framework for HAZUS-MH Flood Loss Estimation Analysis', *Natural Hazards*, 99:1, 275-286, 2019.
 - [188] Sit, M. A., Sermet, Y., **Demir, I.**, 'Optimized Watershed Delineation Library for Server-side and Client-side Web Applications', *Open Geospatial Data, Software and Standards*, 4(1), p8, 2019.
 - [189] Xu, H., **Demir, I.**, Koylu, C., Muste, M., 'A Web-Based Geovisual Analytics Platform for Identifying Potential Contributors to Culvert Sedimentation', *Science of the Total Environment*, 692, 806-817, 2019.
 - [190] Seo, B.C., Keem, M., Hammond, R., **Demir, I.**, Krajewski, W.F., 'A Pilot Infrastructure for Searching Rainfall Metadata and Generating Rainfall Product Using the Big Data of NEXRAD', *Environmental Modelling & Software*, 117, 69-75, 2019.
-

2018

- [191] Sermet, Y., **Demir, I.**, 'An Intelligent System on Knowledge Generation and Communication for Flooding', *Environmental Modeling and Software*, 108, 51-60, 2018.
 - [192] Carson, A., Windsor, M., Hill, H., Haigh, T., Wall, N., Smith, J., Olsen, R., Bathke, D., **Demir, I.**, Muste, M., 'Serious Gaming for Participatory Planning of Multi-Hazard Mitigation', *International Journal of River Basin Management*, 16:3, 379-391, 2018.
 - [193] Weber, L., Muste, M., Bradley, A., Amado, A., **Demir, I.**, Drake, C., Krajewski, W., Loeser, T., Politano, M., Shea, B., Thomas, N., 'The Iowa Watersheds Project: Iowa's prototype for engaging communities and professionals in watershed hazard mitigation', *International Journal of River Basin Management*, 16:3, 315-328, 2018.
-

- [194] Jones, C.S., Davis, C.A., Drake, C.W., Schilling, K.E., Debionne, S.H.P., Gilles, D.W., **Demir, I.**, and Weber, L.J., 'Iowa Statewide Stream Nitrate Load Calculated Using in Situ Sensor Network', *Journal of the American Water Resources Association*, 54, 2, 471-486, 2018.
- [195] **Demir, I.**, Yildirim, E., Sermet, Y., Sit, M.A., 'FLOODSS: Iowa Flood Information System as a Generalized Flood Cyberinfrastructure', *International Journal of River Basin Management*, 16:3, 393-400, 2018.

2017 and before

- [196] **Demir, I.**, Szczepanek, R., 'Optimization of River Network Representation Data Models for Web-based Systems', *Earth and Space Science*, Volume 4, Issue 6, 2017.
- [197] Krajewski, W.F., Ceynar, D., **Demir, I.**, Goska, R., Kruger, A., Langel, C., Mantilla, R., Niemeier, F., Quintero, F., Seo, B.C., Small, S., Weber, L., Young, N., 'Real-Time Flood Forecasting and Information System for the State of Iowa', *Bulletin of the American Meteorological Society*, 98, 539–554, 2017. **[selected as journal cover]**
- [198] Gil, Y., David, C., **Demir, I.**, Essawy, B., Fulweiler, R., Goodall, J., Karlstrom, L., Lee, H., Mills, H., Oh, J., Pierce, S., Pope, A., Tzeng, M., Villamizar, S., Yu, X., 'Towards the Geoscience Paper of the Future: Best Practices for Documenting and Sharing Research from Data to Software to Provenance', *Earth and Space Science*, 3, 2016.
- [199] **Demir, I.**, Conover, H., Krajewski, W., Seo, B., Goska, R., He, Y., McEniry, M.F., Graves, S.J., Peterson, W., 'Data Enabled Field Experiment Planning, Management, and Research using Cyberinfrastructure', *Journal of Hydrometeorology*, 3, 1155-1170, 2015.
- [200] **Demir, I.**, Krajewski, W., 'Towards an integrated Flood Information System: Centralized data access, analysis, and visualization', *Environmental Modeling and Software*, 50, 77-84, 2013.
- [201] Duffy, C., Gil Y., Deelman E., Marru S., Pierce M., **Demir, I.**, Wiener G., 'Designing A Roadmap for Geoscience Workflows', *EOS Transactions American Geophysical Union*, Brief Report, Vol. 93, No. 24, p225-226, 2012.
- [202] Beck, M. B., Jiang, F., Feng, S., Walker, R.V., Osidele, O. O., Lin, Z., **Demir, I.**, and Hall, J., 'Re-Engineering Cities as Forces for Good in the Environment', *Engineering Sustainability - ICE*, 163, 1, 31-46, 2010.
- [203] Aydinler, C., **Demir, I.**, Keskinler, B., and Ince, O., 'Joint Analysis of Transient Flux Behaviors via Membrane Fouling in Hybrid PAC/MF Processes using Neural Network', *Desalination*, 250, 1, 188-196, 2010.
- [204] Sunlu, F.S., **Demir, I.**, Onkal-Engin, G., Büyükişik, B., Sunlu, U., Koray, T., and Kükrer, S., 'Nanoplankton Population Dynamics and Dissolved Oxygen Change across The Bay of Izmir by Neural Networks', *Journal of Environmental Monitoring*, 11, 6, 1165-1168, 2009.
- [205] Bayar S., **Demir, I.**, and Onkal-Engin, G., 'Modeling Leaching Behavior of Solidified Wastes Using Back-Propagation Neural Networks', *Ecotoxicology and Environmental Safety*, 72, 3, 843–850, 2009.

- [206] Onkal-Engin, G., and **Demir, I.**, 'Cost Analysis of Alternative Methods for Wastewater Handling in Small Communities', *Journal of Environmental Management*, 79, 4, 357-363, 2006.
- [207] Onkal-Engin, G., **Demir, I.**, and Engin, S. N., 'e-NOSE Response Classification of Sewage Odors by Neural Networks and Fuzzy Clustering', *Advances in Natural Computation*, Pt 2, Proceedings Lecture Notes in Computer Science, 3611, 648-651, 2005.
- [208] Onkal-Engin, G., **Demir, I.**, and Engin, S. N., 'Determination of the Relationship between Sewage Odor and BOD by Neural Networks', *Environmental Modeling & Software*, 20, 7, 843-850, 2005.
- [209] Aydiner, C., **Demir, I.**, and Yildiz, E., 'Modeling of Flux Decline in Crossflow Microfiltration Using Neural Networks: The Case of Phosphate Removal', *Journal of Membrane Science*, 248, 1-2, 53-62, 2005.
- [210] Onkal-Engin, G., **Demir, I.** and Hiz, H., 'Assessment of Urban Air Quality in Istanbul using Fuzzy Synthetic Evaluation', *Atmospheric Environment*, 38, 23, 3809-3815, 2004.

Pre-print Articles

- [211] Cikmaz, A.B., Mount, J., and **Demir, I.**, 'Evaluating the Flood Vulnerability of Urban Areas in Polk County, Iowa using Social-Ecological-Technological Framework', EarthArxiv, 2024.
- [212] Sit, M., Demiray, B.Z. and **Demir, I.**, 'A Systematic Review of Deep Learning Applications in Streamflow Data Augmentation and Forecasting', EarthArxiv, 2022.
- [213] Sit, M., Demiray, B.Z. and **Demir, I.**, 'A Systematic Review of Deep Learning Applications in Interpolation and Extrapolation of Precipitation Data', EarthArxiv, 2022.
- [214] Sit, M.A., Seo, B.C., **Demir, I.**, 'CNN-based Temporal Super Resolution of Radar Rainfall Products', ArXiv - *arXiv:2109.09289 [cs.CV]*, 2021.
- [215] Sermet, Y., **Demir, I.**, 'A Generalized Web Component for Domain-Independent Smart Assistants', *arXiv:1909.02507 [cs.HC]*, 2019.
- [216] Sit, M.A., **Demir, I.**, 'Decentralized Flood Forecasting Using Deep Neural Networks', EarthArxiv - *arXiv:1902.02308 [cs.LG]* - *doi:10.31223/osf.io/e9xqr*, 2019.

Conference Papers

- [217] Duran, E., Mount, Y., **Demir, I.**, 'Flood Impact Analysis on Iowa Bridge Infrastructure through Combined AHP and Fuzzy AHP Approaches', 6th IAHR Young Professionals Congress, Dec 3-5, 2025, Online.
- [218] Sarkar, A., Hakimi, A., Chen, X., Huan, H., Lu, C., **Demir, I.**, Jannesari, A., 'Flood Prediction with Distributed Spatiotemporal Graph Attention Networks [Applications]', 33rd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Nov 3-6, 2025, Minneapolis, MN [*selected as ACM Showcase article*].
- [219] Boyer, M., Bostick, L.A., **Demir, I.**, Adhikari, B., Panthi, K., Samadi, V., Saberian, M., Erazo, C., 'WIP: Formative Findings from the First Year Implementation of a Water and Data Science Workshop', 2025 ASEE Annual Conference, June 22-25, Montreal, Canada.

- [220] Pathak, R., Vald, G., Sermet, Y., **Demir, I.**, 'Utilizing Large Language Models to Predict ICD-10 Diagnosis Codes of Patient Medical Records', MIT URTC – Undergraduate Research Technology Conference, Oct 11-13, 2024, Cambridge, MA.
- [221] Baydaroglu, O., **Demir, I.**, 'The Impact of Data Augmentation on Flood Nowcasting', 36th OSTIV Congress, Aug 19-23, 2024, Uvalde, TX.
- [222] Pursnani, V., Sermet, Y., Samuel, D.J., Sajja, R., **Demir, I.**, 'Enhancing Floodplain Decision-Making: A Novel AI Virtual Assistant Integrating GPT and Semantic Technologies', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [223] Vald, G., Samuel, D.J., Sermet, Y., Shrestha, S., Mount, J., Cwiertny, D., **Demir, I.**, 'Utilizing ChatGPT for Enhanced Water Quality Management through Conversational AI Technology', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [224] Emiroglu, E.R., Grant, C.A, Sermet, Y., **Demir, I.**, 'Gamifying Flood Mitigation Education: Development and Implementation of FloodCraft in Minecraft for Enhancing Youth Resilience to Flooding', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [225] Sermet, Y., Mitta, D., **Demir, I.**, 'Enhancing Efficiency and Objectivity in Environmental Academic Peer Review Processes through Artificial Intelligence', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [226] Samuel, D.J., Vald, G., Sermet, Y., Shrestha, S., Mount, J., Cwiertny, D., Sajja, R., **Demir, I.**, 'Advancing Water Quality Management Through Conversational AI: The Development of a Data Expert System', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [227] Mudiyansele, U.H., Gonzalez, E., Rahmani, A., Sermet, Y., **Demir, I.**, 'Enhancing Hydrological Data Visualization Through Extended Reality: A Framework for Environmental Decision-Making', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [228] Sajja, R., Sermet, Y., Cwiertny, D., **Demir, I.**, 'Integrating AI-Enhanced Adaptive Learning Systems in Environmental Sciences Education', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [229] Kadiyala, L.A., Samuel, D.J., Mermer, O., Sermet, Y., Sajja, R., **Demir, I.**, 'A Comprehensive Comparison of Multimodal Large Language Models (MLLMs) in Hydrology', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [230] Shrestha, S., Mount, J., Vald, G., Sermet, Y., Samuel, D.J., Cwiertny, D., **Demir, I.**, 'Advancing Nitrogen Management and Water Quality Analysis through Cyberinfrastructure and AI Integration', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.

- [231] **Demir, I.**, Sermet, Y., 'Conversational AI, Digital Twins, and Metaverse in Water Resources Research, Education and Operations', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [232] Erazo, C., Sermet, Y., **Demir, I.**, 'HydroSuite: Open Source Collaborative Web-based Software Suite for Hydrological Research and Education', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [233] Erazo, C., Shahid, M., Sermet, Y., **Demir, I.**, 'Development of a Communication Library for Large-Scale Data Processing and Transfer in the Hydrological Domain', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [234] Demiray, B.Z., Erazo, C., **Demir, I.**, 'A New Wave in Hydrological Modelling: Transformer Models for Extended Streamflow Prediction', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [235] Gonzalez, E., Rahmani, A., Sermet, Y., **Demir, I.**, 'FloodSim Sandbox: Leveraging Realtime Fluid Simulation in Flood Visualization', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [236] Rahmani, A., Sermet, Y., **Demir, I.**, 'Enhancing Hydroinformatics Education through Virtual Reality and AI Integration', 12th International Congress on Environmental Modelling and Software, Jun 23-27, 2024, East Lansing, MI.
- [237] Erazo, C., Sermet, Y., **Demir, I.**, 'HydroCompute: An Open-Source Web-Based Computational Library for Hydrology and Environmental Sciences', 4th IAHR Young Professionals Congress, November 22-24, 2023, Online.
- [238] Muste, M., Cikmaz, A.B., Lamoreaux, A., Baydaroglu-Yesilkoy, O., **Demir, I.**, Meselhe, E., Bacotiu, C. 'Monitoring the Manning's N coefficient variation over the yearly cycle', 40th IAHR World Congress, August 21-25, 2023, Vienna, Austria.
- [239] Merwade, V., Cox, A., **Demir, I.**, Minear, J.T., Muste, M., 'RIMORPHIS: River Morphology Information System', SEDHYD-2023, Sedimentation and Hydrologic Modeling Conference, May 8-12, 2023, St. Louis, MO.
- [240] Botero-Acosta, A., Cox, A. L., Sagan, V., **Demir, I.**, Muste, M., Boyd, P., Pathak, C., 'Anomaly Detection of Watershed Variables Related to Sedimentation in US Reservoirs', SEDHYD-2023, Sedimentation and Hydrologic Modeling Conference, May 8-12, 2023, St. Louis, MO.
- [241] Meyer, D., Cox, A. L., Botero-Acosta, A., Sagan, V., **Demir, I.**, Muste, M., Pathak, C., Boyd, P., 'Estimating Reservoir Sedimentation using Deep Learning and the USACE RSI System Dataset', SEDHYD-2023, Sedimentation and Hydrologic Modeling Conference, May 8-12, 2023, St. Louis, MO.
- [242] Sit, M., Demiray, B.Z. and **Demir, I.**, 'EfficientTempNet: Temporal Super-Resolution of Radar Rainfall', The 11th International Conference on Learning Representations (ICLR) - Tackling Climate Change with Machine Learning: Global Perspectives and Local Challenges, May 1-5, 2023, Kigali, Rwanda.

-
- [243] Erazo, C., Sermet, Y., **Demir, I.**, 'Hydrolang Markup Language: Community-Driven Web Components for Hydrological Analyses', 3rd IAHR Young Professionals Congress, Nov 28-Dec 2, 2022, Virtual.
 - [244] **Demir, I.**, Galelli, S., 'Next Generation Hydroinformatics Applications in Water Resources Research and Education', ICWRER 2022 9th International Conference on Water Resources and Environment Research, April 25-27, 2022, Virtual.
 - [245] Demiray, B.Z., Sit, M.A., **Demir, I.**, 'DEM Super-Resolution with EfficientNetV2', *NeurIPS 2021 Workshop Tackling Climate Change with Machine Learning*, December 14, 2021, Virtual.
 - [246] Xiang, Z., **Demir, I.**, 'High-resolution rainfall-runoff modeling using graph neural network', *NeurIPS 2021 Workshop Tackling Climate Change with Machine Learning*, December 14, 2021, Virtual.
 - [247] Sit, M. A., Demiray, B. Z., **Demir, I.**, 'Short-term Hourly Streamflow Prediction with Graph Convolutional GRU Networks', *38th International Conference on Machine Learning (ICML 2021)*, July 18-24, 2021, Virtual.
 - [248] Sit, M. A., Seo, B., **Demir, I.**, 'IowaRain: A Statewide Rain Event Dataset Based on Weather Radars and Quantitative Precipitation Estimation', *38th International Conference on Machine Learning (ICML 2021)*, July 18-24, 2021, Virtual.
 - [249] Sermet, Y. and Demir, I., An Immersive Decision Support System for Disaster Response. In 26th ACM Symposium on Virtual Reality Software and Technology, 40, pp. 1-3. November 2020.
 - [250] Mount, J., Alabbad, Y., **Demir, I.**, 'Towards an Integrated and Realtime Wayfinding Framework for Flood Events', *2nd ACM SIGSPATIAL International Workshop on Advances in Resilient and Intelligent Cities (ARIC 2019)*, November 5, 2019, Chicago, Illinois, USA.
 - [251] Sermet, Y., **Demir, I.**, Kucuksari, S., 'Overhead Power Line Sag Monitoring through Augmented Reality', *IEEE 2018 North American Power Symposium*, September 9-11, 2018, Fargo, ND.
 - [252] Sermet, Y., **Demir, I.**, 'Flood Action VR: A Virtual Reality Framework for Disaster Awareness and Emergency Response Training', *15th International Conference on Modeling, Simulation and Visualization Methods (MSV'18)*, July 30-August 2, 2018, Las Vegas, NV.
 - [253] Ebert-Uphoff, I., Thompson, D.R., **Demir, I.**, Gel, Y.R., Hill, M., Karpatne, A., Guereque, M., Kumar, V., Cabral-Cano, E., Smyth, P., 'A Vision for the Development of Benchmarks to Bridge Geoscience and Data Science', *Proceedings of the Seventh International Workshop on Climate Informatics (CI 2017)*, NCAR Technical Note NCAR/TN-536+PROC, September 20-22, 2017, Boulder, CO.
 - [254] Xu, H. Hameed, H., Windsor, M., Muste, M., **Demir, I.**, Smith, J., Hunemuller, T., Stevenson, M. B., 'Decision-Support System for Collaborative Planning on Multi-Hazard Mitigation', *37th IAHR World Congress*, August 13-18, 2017, Kuala Lumpur, Malaysia.
 - [255] **Demir, I.**, 'Interactive Web-based Hydrological Simulation System as an Education Platform using Augmented and Immersive Reality', *ASEE North Midwest Section Meeting*, October 16-18, 2014, Iowa City, IA, USA.
-

- [256] Haltas, I., **Demir, I.**, 'Toward a Flood Information System (TABİS) for Turkey', *HIC 2014 – 11th International Conference on Hydroinformatics*, August 17-21, 2014, New York, NY, USA.
- [257] **Demir, I.**, Small, S., Goska, R., Keahey, K., Armstrong, P., Riteau, P., Seo, B., Mantilla, R., Krajewski, W., 'Data Integration, Modeling and Information Communication for Flood Risk Mitigation using Cloud Computing', *8th International Congress on Environmental Modelling and Software (iEMSs)*, June 15-19, 2014, San Diego, CA, USA.
- [258] Beck, M. B., Walker, R. V., Jiang, F., **Demir, I.**, and Hall, J. W., 'Re-Engineering Cities as Forces for Good in the Environment: Paths of Transition to Distant Future Alternatives', Paper # 3078, in *Proceedings of World Water Congress and Exhibition*, September 19–24, 2010, Montréal, Canada.
- [259] **Demir, I.**, Jiang, F., Walker, R. V., Parker, A. K., and Beck, M. B., 'Information Systems and Social Legitimacy: Scientific Visualization of Water Quality', in *Proceedings of IEEE Int. Conference on Systems, Man, and Cybernetics*, p1093-1098, October 11-14, 2009, San Antonio, TX, USA.
- [260] **Demir, I.**, and Beck, M. B., 'GWIS: A Prototype Information System for Georgia Watersheds', Paper 6.6.4, in *Proceedings of Georgia Water Resources Conference: Regional Water Management Opportunities*, April 27-29, 2009, UGA, Athens, GA, USA.
- [261] Onkal-Engin, G., **Demir, I.**, and Engin, S. N., 'e-Nose Response Classification of Sewage Odours by Neural Networks and Fuzzy Clustering', *First International Conference on Natural Computation (ICNC'05)*, 27 - 29 August 2005, Changsha, China.
- [262] Karpuzcu, M., Onkal-Engin, G., and **Demir, I.**, 'Alternative Approaches for Wastewater Treatment and Disposal in Developing Countries', *5th Specialized Conference on Small Water and Wastewater Treatment Systems*, 24-26 September 2002, Vol. I, 187-194, Istanbul, TURKEY.

Other Publications & Reports

- [263] Technical Report, ASPM 2025 Use of AI in Floodplain Management, Association of State Floodplain Managers, 2025 [contributor]
- [264] CM CO-Learn, Central Midwest Climate Opportunities and Learning Report, 2024 [contributor]
- [265] UN WWDR 2023, United Nations World Water Development Report, Water and Climate Change, 2023 [contributor]
- [266] IWA Global Trends & Challenges in Water Science, Research and Management, International Water Association, 3rd Edition, 2023. [contributor]
- [267] Demir, I., and Freni, G., Monitoring and communication technologies for climate change, Hydrolink, 3, 2022.
- [268] Cox, A. L., Meyer, D., Botero-Acosta, A., Sagan, V., **Demir, I.**, Muste, M., Data Anomaly Detection and Sediment Yield Estimation in the US Army Corps of Engineers' Reservoir Sedimentation Information (RSI) Database, July 2022, U.S. Army Corps of Engineers.
- [269] NSF Workshop Report, Convergence Accelerator (CA) - Open Knowledge Network (OKN) EarthCube Workshop, ESIP 2020 Winter Meeting, January 6, 2020, North Bethesda, MD. [contributor]

- [270] UN WWDR 2020, United Nations World Water Development Report, Water and Climate Change, 2020 [contributor]
- [271] Workshop Report, National Workshop on Developing a Research Agenda for Connected Rural Communities (CR17), September 7-8, 2017, Charlottesville, VA.
- [272] Muste, M., **Demir, I.**, Smith, J.T., Hunemuller, T. and Stevenson, M.B., 2017. 'Prototype Multi-Jurisdictional Decision-Making Web Platform for Integrated Water Resources Management: From Interagency Collaboration to Implementation in the Iowa-Cedar Watershed', Report G15AP0041, USGS & Institute of Water Resources, US Army Corps of Engineers, Baltimore, MD.
- [273] **Demir, I.**, Yildirim, E., 'HAZUS Flood Loss and Damage Estimation on the Web', *HAZUS HotZone Newsletter*, September Issue, September 2017.
- [274] Muste, M., **Demir, I.**, 'Serious Gaming for Community Engagement in Multi-Hazard Mitigation', *Hydrolink, IAHR*, Issue 1, 2017.
- [275] **Demir, I.**, Krajewski, W.F., 'A Novel Cyberinfrastructure System for Integrated Data Collection, Dissemination and Sharing via Web Technologies', *The NHWK Transmission, The National Hydrologic Warning Council (NHWK)*, October Issue, 2015.
- [276] **Demir, I.** (as contributor), Submitted by Technology and Architecture Committee, 'EarthCube Strategic Technology Plan', *NSF EarthCube*, August 31, 2015.
- [277] Richard, S., **Demir, I.**, Arko, A., Fils, D., 'Standards and Standards Bodies Working Group Proposal', *NSF EarthCube*, March 5, 2015.
- [278] Haltas, I., **Demir, I.**, 'Flood Sensor Technologies and Trend Analysis Report', *The Scientific and Technological Research Council of Turkey (TUBITAK), Information Technology Institute*, 2014-2015.
- [279] Krajewski, W., **Demir, I.**, 'The Iowa Flood Information System Makes Iowans Safer, Better Informed', *Hydrolink, IAHR*, Issue 1, 30-31, 2014.
- [280] Gil, Y., Deelman, E., **Demir, I.**, Duffy, C., Marru, S., Altintas, I., E. Pierce, M., et al. 'A Workflows Roadmap for the Geosciences', *EarthCube Workflows Community Group Report, NSF*, June 10, 2012.

Conference Abstracts & Presentations

- [281] Samadi, V., Adhikari, B., Boyer, D. M., Anthony, C., **Demir, I.**, Panthi, K., Neupane, A., Saberian, M., Zafarmomen, N., 'WaterSoftHack: Machine Learning, Data Analytics and Cyberinfrastructure Training for Water Science and Engineering', AGU Fall Meeting, Dec 15-19, 2025, New Orleans, LA.
- [282] **Demir, I.**, Sermet, Y., Sajja, R., Kizilkaya, D., 'HydroLLM: Advancing Domain-Specific Language Models and Semantic Retrieval for Hydrological Science and Decision Support', AGU Fall Meeting, Dec 15-19, 2025, New Orleans, LA.
- [283] **Demir, I.**, Sermet, Y., 'Immersive and Game-Based Technologies for Flood Risk Communication, Education, and Collaborative Environmental Simulation', AGU Fall Meeting, Dec 15-19, 2025, New

Orleans, LA.

- [284] **Demir, I.**, Sermet, Y., Sajja, R., Pursnani, V., 'AI-Augmented Floodplain Management: Integrating Conversational Agents, Adaptive Training, and Multi-Agent Decision Support for Resilient Water Resource Planning', AGU Fall Meeting, Dec 15-19, 2025, New Orleans, LA.
- [285] Erazo, C., **Demir, I.**, 'HydroBlox: AI-Assisted Visual Programming Framework for Enhanced Scientific Reproducibility in Hydrology', AGU Fall Meeting, Dec 15-19, 2025, New Orleans, LA.
- [286] Erazo, C., **Demir, I.**, 'AI-Assisted Voice Enabled Computing Framework for Hydrological Analysis', AGU Fall Meeting, Dec 15-19, 2025, New Orleans, LA.
- [287] Saiduzzaman, M., Seo, B. C., **Demir, I.**, Kim, D., 'Assessment of Channel Routing Methods in the NextGen National Water Model', AGU Fall Meeting, Dec 15-19, 2025, New Orleans, LA.
- [288] Wagle, P., Nelson, J., Hales, R., Rosas, L., **Demir, I.**, 'Integrating Diverse Flood Inundation Datasets into a Harmonized Database and Visualization Framework for Enhanced Decision Support', AGU Fall Meeting, Dec 15-19, 2025, New Orleans, LA.
- [289] Merwade, V., Cox, A., **Demir, I.**, Minear, J. T., Muste, M., 'RIMORPHIS – A platform for discovering and processing river morphology data', AGU Fall Meeting, Dec 15-19, 2025, New Orleans, LA.
- [290] Dumars, R., House, E., Meselhe, E. A., Muste, M., **Demir, I.**, 'Short Term Forecasting of Stage and Discharge in Hysteretic Rivers using Deep Learning', AGU Fall Meeting, Dec 15-19, 2025, New Orleans, LA.
- [291] Chi, N.-C., Vald, G., **Demir, I.**, Buckwalter, K., & Herr, K., 'Usability testing of the PACE-App to support family caregivers in managing pain for people with dementia'. National Hartford Center for Gerontological Nursing Excellence 2025 Annual Conference, October 21-23, 2025, Virtual.
- [292] **Demir, I.**, 'Conversational AI, Digital Twins, and Immersive Technologies in Engineering', 2025 Southeast Symposium on Contemporary Engineering Topics (SSCET), Oct 17, 2025, Baton Rouge, LA.
- [293] Erazo, C., **Demir, I.**, 'HydroSuite: Collection of Web-Based Software for Hydrology Research & Education', 2025 Southeast Symposium on Contemporary Engineering Topics (SSCET), Oct 17, 2025, Baton Rouge, LA.
- [294] Sermet, Y., **Demir, I.**, 'Large Language Model Applications in Enhancing Hydrological Research, Education, and Operations', 2025 Southeast Symposium on Contemporary Engineering Topics (SSCET), Oct 17, 2025, Baton Rouge, LA.
- [295] **Demir, I.**, Sermet, Y., 'AI-Augmented Immersive Digital Twin and Visual Analytics Framework for Hydrology', CIROH Science Meeting, Sep 15-18, 2025, Tuscaloosa, AL.
- [296] Weber, L., Krajewski, W., **Demir, I.**, 'Intelligent Data Analytics & Communication CI for R2O in Hydrology', CIROH Science Meeting, Sep 15-18, 2025, Tuscaloosa, AL.
- [297] Lamoreux, A., Kim, K., Muste, M., Williams, P., **Demir, I.**, Everhart, R., 'Temporal Variation of Manning's Roughness Coefficient in Vegetated Streams', CIROH Science Meeting, Sep 15-18, 2025, Tuscaloosa, AL.

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- [298] Saiduzzaman, M., Seo, B.C., **Demir, I.**, Quintero, F., Kim, D., ‘Comparative Assessment of the NWM Channel Routing Models for Enhanced Streamflow Data Assimilation’, CIROH Science Meeting, Sep 15-18, 2025, Tuscaloosa, AL.
 - [299] House, E., Meselhe, E., Muste, M., **Demir, I.**, ‘Uncovering the Drivers of Streamflow Hysteresis: A Momentum-Based Approach for Enhanced Flow Insights’, 41st IAHR World Congress, 22-27 June 2025, Singapore.
 - [300] Wagle, P., Nelson, E.J., Hales, R., Moiyad, S., **Demir, I.**, ‘A Collaborative Approach for National-Scale Flood Mapping Using Multiple FIM Sources’, CIROH Developers Conference, May 28-30, 2025, University of Vermont, Burlington, VT.
 - [301] **Demir, I.**, Sermet, Y., ‘AI, Digital Twins, and Metaverse in Hydrology Research, Education and Operations’, CIROH Developers Conference, May 28-30, 2025, University of Vermont, Burlington, VT.
 - [302] **Demir, I.**, ‘Floodplain Manager AI: An Intelligent Multimodal Assistant for Enhanced Floodplain Management’, 2025 ASFPM - Association of State Floodplain Managers Conference, May 18-22, 2025, New Orleans, LA.
 - [303] Yıldırım, E., Cikmaz, B., Alabbad, Y., **Demir, I.**, ‘An Evaluation of Flood Risk for Railway Infrastructure: A Case Study in Iowa’, 4th International Civil Engineering & Architecture Conference, 17-19 May 2025, Trabzon, Türkiye.
 - [304] Sermet, Y., **Demir, I.**, ‘Unveiling the Reviewer Mindset: Evidence-Based Insights into Scholarly Peer Review’, 18th EASE General Assembly and Conference, Editing in the Age of Misinformation, 14-16 May 2025, Oslo, Norway.
 - [305] Merwade, V., Muste, M., Minear, J. T., Cox, A., Dey, S., **Demir, I.**, Sermet, Y., & Chegini, T., ‘RIMORPHIS – A platform for discovering and processing river morphology data’, EGU General Assembly, Apr 27 – May 2, 2025, Vienna, Austria.
 - [306] Erazo, C., **Demir, I.**, ‘HydroBlox – A Visual Programming Framework for Scientific Reproducibility and Data Sharing in Hydrology’, Research Open House, University of Iowa, April 24, 2025, Iowa City, IA.
 - [307] Samadi, V., Erazo, C., Panthi, K., **Demir, I.**, Castronova, A., Adhikari, B., & Boyer, D. M., ‘WaterSoftHack: Best Practices for Advancing Cyberinfrastructure and Machine Learning Training in Water Science’, AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [308] House, E., Meselhe, E. A., Muste, M., & **Demir, I.**, ‘Parameterization of Hysteretic Behavior in Streamflow through an Analysis of Driving Forces in the Momentum Budget’, AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [309] Merwade, V., Muste, M., Minear, J. T., Cox, A., Dey, S., **Demir, I.**, Sermet, Y., & Chegini, T., ‘RIMORPHIS – A platform for discovering and processing river morphology data’, AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [310] Muste, M., Kim, K., & **Demir, I.**, ‘Stage-discharge Ratings in Unsteady Flows: Corrections, Improvements, Replacements’, AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
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- [311] Erazo, C., Sermet, Y., & **Demir, I.**, 'No-Code Voice-Enabled Smart Web Framework for Hydrology and Environmental Analysis', AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [312] Oldham, S., Prince, L., Larco, K., Nelson, J., Hales, R., **Demir, I.**, & Ames, D. P. 'Multi-Model and Multi-Agency Approach to Expand the Flood Inundation Mapping Capacity of the US National Water Model', AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [313] Quintero, F., Seo, B. C., Molina, R., Velasquez, N., & **Demir, I.**, 'Adapting the Iowa Flood Center Hillslope Link Model for compatibility with the CIROH Nextgen Framework', AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [314] Kim, S., Seo, B. C., **Demir, I.**, & Kim, D. H., 'A Preliminary Evaluation of Channel Routing Methods in the National Water Model', AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [315] Baydaroğlu, Ö., & **Demir, I.**, 'Enhancing Rainfall Nowcasting Through Data Augmentation', AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [316] Erazo, C., Sermet, Y., & **Demir, I.**, 'HydroSuite: A collection of web-based software libraries for hydrology research, education, and operations', AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [317] **Demir, I.**, Muste, M., Minear, J. T., Kim, K., & Meselhe, E. A., 'Inferences about channel dynamics at gauging sites using free surface slope measurements derived from SWOT satellite measurements', AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [318] **Demir, I.**, 'Large Language Model Applications in Enhancing Hydrological Research, Education, and Operational Activities', AGU Fall Meeting, December 9 – 13, 2024, Washington, D.C.
 - [319] Ames, D.P., Swain, N., Romero, G., **Demir, I.**, 'The NWM Research Apps Portal - A One-Stop-Shop Catalog of R2O Web Applications', CIROH Science Meeting, Oct 14 – 17, 2024, Tuscaloosa, AL.
 - [320] Seo, B.C., **Demir, I.**, 'Comparative Assessment of the NWM Channel Routing Models for Enhanced Streamflow Data Assimilation', CIROH Science Meeting, Oct 14 – 17, 2024, Tuscaloosa, AL.
 - [321] **Demir, I.**, Sermet, Y., Krajewski, W., Weber, L., 'Intelligent Data Analytics & Communication Cyberinfrastructure for Research to Operations in Hydrology', CIROH Science Meeting, Oct 14 – 17, 2024, Tuscaloosa, AL.
 - [322] **Demir, I.**, Sermet, Y., 'AI-Augmented Immersive Digital Twin and Visual Analytics Framework for Hydrology', CIROH Science Meeting, Oct 14 – 17, 2024, Tuscaloosa, AL.
 - [323] Nelson, J., **Demir, I.**, Maidment, D., 'Expanding the Impact of the NWM FIM Capabilities', CIROH Science Meeting, Oct 14 – 17, 2024, Tuscaloosa, AL.
 - [324] Sermet, Y., Gonzalez, E., **Demir, I.**, 'Urban Flood Impact Visualizer: A Real-Time Interactive Simulation Platform for City Infrastructure and Flood Management', 2024 AWRA, UCOWR, NIWR Joint Water Resources Conference, Sep 30 – Oct 2, 2024, St. Louis, MO.
 - [325] Sermet, Y., Mitta, D., **Demir, I.**, 'Enhancing Efficiency and Objectivity in Academic Peer Review in the Water Sector through Artificial Intelligence', 2024 AWRA, UCOWR, NIWR Joint Water Resources Conference, Sep 30 – Oct 2, 2024, St. Louis, MO.
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- [326] Cox, A., Merwade, V., Muste, M., **Demir, I.**, Minear, J.T., Dey, S., Liang, C., Sermet, Y., Chegini, T., 'RIMORPHIS: An Information System to Advance River Morphology Research', 2024 AWRA, UCOWR, NIWR Joint Water Resources Conference, Sep 30 – Oct 2, 2024, St. Louis, MO.
- [327] **Demir, I.**, Sermet, Y., 'Conversational AI, Digital Twins, and Metaverse in Water Resources Research, Education, and Operations', 2024 AWRA, UCOWR, NIWR Joint Water Resources Conference, Sep 30 – Oct 2, 2024, St. Louis, MO.
- [328] Islam, S.M.S., Cwiertny, D., **Demir, I.**, 'Nitrate Levels in Iowa's Public Water Systems: Trends, Sources, and Population Impact', Iowa Water Conference, Sep 10 – 11, 2024, Coralville, IA.
- [329] Baydaroglu, O., Yesilkoy, S., **Demir, I.**, 'A Causality Perspective on the Impact of Hydroclimatic Extremes on Crop Yields', EMS – European Meteorological Society Annual Meeting, Sep 2 – 6, 2024, Barcelona, Spain (Online).
- [330] Baydaroglu, O., Yesilkoy, S., Linderman, M., **Demir, I.**, 'Modeling of Harmful Algal Bloom Dynamics and the Model-Based Interactive Framework for Inland Waters', EMS – European Meteorological Society Annual Meeting, Sep 2 – 6, 2024, Barcelona, Spain (Online).
- [331] Gonzalez, E., Sermet, Y., **Demir, I.**, 'Urban Flood Impact Visualizer: A Real-Time Interactive Simulation Platform for City Infrastructure and Flood Management', SIGGRAPH 2024, Jul 28 – Aug 1, 2024, Denver, CO.
- [332] **Demir, I.**, Sermet, Y., 'Conversational AI, Digital Twins, and Metaverse in Water Resources Research, Education and Operations', CIROH Developers Conference, May 29 – Jun 1, 2024, Salt Lake City, UT.
- [333] Erazo, C., Sermet, Y., **Demir, I.**, 'HydroSuite: Open-Source Community-Oriented Software Suite for Hydrological Research and Education', CIROH Developers Conference, May 29 – Jun 1, 2024, Salt Lake City, UT.
- [334] Sermet, T., Gonzalez, E., Rahmani, A., Emiroglu, E., Grant, C.A., **Demir, I.**, 'Enhancing Hydroinformatics Research, Operation, and Education through Virtual Reality, Artificial Intelligence, and Gaming', CIROH Developers Conference, May 29 – Jun 1, 2024, Salt Lake City, UT.
- [335] **Demir, I.**, 'Artificial Intelligence and Cyberinfrastructure Systems for Environment and Water Resources', 2024 Chishiki AI Research Summit, Apr 4-5, 2024, Austin, TX.
- [336] **Demir, I.**, 'Decision Making in the Era of Artificial Intelligence, Digital Twin Systems and Metaverse', Harnessing the Heartland Conference, Feb 26-28, 2024, Lincoln, NE.
- [337] **Demir, I.**, 'Enhancing Hydrological Research, Education, and Operational Roles with Conversational AI Agents', Google Flood Forecasting Meets Machine Learning Workshop, Jan 22-24, 2024, Virtual.
- [338] Li, Z., **Demir, I.**, 'MA-SARNets: One-Shot SAR Backscatter Nowcast Frameworks with Physical Driving Forces and Out-of-Scope Information', AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.

- [339] **Demir, I.**, 'Conversational AI, Digital Twins, and Metaverse Systems in Hydrology & Water Resources Education and Operations', AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.
- [340] Li, Z., **Demir, I.**, 'Flood Sequence Mapping with Multimodal Remote Sensing under the Influence of Dense Vegetation: Mississippi River Case Study', AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.
- [341] Erazo, C., Sermet, Y., Shahid, M., **Demir, I.**, 'HydroRTC: A Web-Based Communication Library for Collaborative Data Sharing in the Hydrological Domain', AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.
- [342] Sermet, Y., Muste, M., **Demir, I.**, 'RIMORPHIS: A Comprehensive Web-Based Cyberinfrastructure for River Morphology Research', AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.
- [343] Merwade, V., **Demir, I.**, Minear, J.T., Muste, M., Cox, A., Liang, C., Dey, S., Sermet, Y., 'RIMORPHIS - An Information System for Accessing and Processing River Morphology Data', AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.
- [344] Larco, K., Nelson, J., Hales, R., Maidment, D.R., **Demir, I.**, Salas, F.R., et al., 'Enhancing Collaborative Ensemble Flood Inundation Mapping with Standardized Data Sharing and Model Metadata', AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.
- [345] House, E., Meselhe, E.A., Muste, M., **Demir, I.**, 'Numerical Modeling of Streamflow Hysteresis to Inform Protocols for Monitoring Unsteady Flow', AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.
- [346] House, E., Muste, M., Meselhe, E.A., **Demir, I.**, Cikmaz, A.B., Baydaroglu, O., Beg, N.A., 'Novel Integration of Direct Measurements with Numerical Models for Real-Time Estimation and Forecasting of Streamflow Response to Cyclical Processes', AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.
- [347] Chi, N. C., Shanahan, A., Nguyen, K., **Demir, I.**, Fu, Y. K., Herr., K. 'Usability Testing of the PACE-App to Support Family Caregivers in Managing Pain for People with Dementia'. Gerontological Society of America (GSA) 2023 Annual Scientific Meeting, Nov 8-12, 2023, Tampa, FL, US.
- [348] Erazo, C., Sermet, Y., **Demir, I.**, 'HydroCompute: An Open-Source Web-Based Computational Library for Hydrology and Environmental Sciences', IAHR 4th Young Professional Congress, Nov 22-24, 2023. Online.
- [349] **Demir, I.**, 'Intelligent Data Analytics and Communication', CIROH Science Meeting, October 2-4, 2023, Tuscaloosa, AL.
- [350] Cikmaz, A.B., **Demir, I.**, 'A Comprehensive Flood Risk Assessment for the Railroad Network: Case Study for Iowa', APA Upper Midwest Conference, October 11-13, 2023, Cedar Falls, IA.
- [351] Erazo, C., Sermet, Y., **Demir, I.**, 'HydroLang, HydroLang-ML, and HydroCompute: A Web-based Software Suite for Client-Side Environmental and Hydrological Analyses', Iowa Water Conference, September 10-11, 2023, Coralville, IA.

- [352] Muste, M., Meselhe, E., **Demir, I.**, Loeser, T., Lynch, M., 'A New Paradigm for Monitoring Steady and Unsteady Flows in Rivers', Hydraulic Measurements & Experimental Methods Conference, June 25-29, 2023, Fort Collins, CO.
- [353] Prouty, C., Smith, W., Watkins, S., Moore, T., Cheek, L., Ellis, A., Davis, B., Zarger, R., Burke, M., Cwiertny, D.M., **Demir, I.**, Muller-Karger, F., Meyers, S., Trotz, M., 'Bridging communities upstream and downstream for nitrogen management: an inclusive, people-centered platform and capacity-building initiative', AEESP Research and Education Conference, June 20-23, 2023, Boston, MA.
- [354] House, E., Meselhe, E., Beg, N., Muste, M., **Demir, I.**, 'Real-Time Estimation and Forecasting of Streamflow Response to Cyclical Processes', The State of the Coast (SOC) Conference, May 31 – June 2, 2023, New Orleans, LA.
- [355] Erazo, C., Sermet, Y., **Demir, I.**, 'HydroLang, HydroLang-ML, and HydroCompute: A Web-based Software Suite for Client-Side Environmental and Hydrological Analyses', CIROH Annual Training and Developers Conference, May 16-18, 2023, Salt Lake City, UT.
- [356] Sermet, Y., Pursnani, V., Singh, N., **Demir, I.**, 'Development of an Intelligent Hydroinformatics Chatbot and Virtual Educational Assistant for Enhancing Learning and Research in the Hydrological Domain', CIROH Annual Training and Developers Conference, May 16-18, 2023, Salt Lake City, UT.
- [357] Merwade, V., Muste, M., **Demir, I.**, Cox, A., Minear, T., 'RIMORPHIS: River Morphology Information System', SEDHYD Sedimentation and Hydrologic Modeling Conference, May 8-12, 2023, St. Louis, MO.
- [358] Botero-Acosta, A., Cox, A., Sagan, V., **Demir, I.**, Muste, M., Boyd, P., Pathak, C., 'Anomaly Detection of Watershed Variables Related to Sedimentation in US Reservoirs', SEDHYD Sedimentation and Hydrologic Modeling Conference, May 8-12, 2023, St. Louis, MO.
- [359] Meyer, D., Cox, A., Botero-Acosta, A., Sagan, V., **Demir, I.**, Muste, M., Pathak, C., Boyd, P., 'Estimating Reservoir Sedimentation Using Deep Learning and The USACE RSI System Dataset', SEDHYD Sedimentation and Hydrologic Modeling Conference, May 8-12, 2023, St. Louis, MO.
- [360] House, E., Meselhe, E., Beg, N., Muste, M., **Demir, I.**, 'Numerical Modeling of Riverine Streamflow Under Hysteretic Conditions', Lower Mississippi River Science Symposium, April 27-28, 2023, New Orleans, LA.
- [361] Alabbad, Y., Mount, J., **Demir, I.**, 'A Web-based Framework for Optimizing Road Network Accessibility and Location-Allocation During Flooding', Iowa Research Open House, April 20, 2023, University of Iowa.
- [362] Erazo, C., **Demir, I.**, 'HydroCompute: Computational Library for Hydrology and Environmental Sciences', Iowa Research Open House, April 20, 2023, University of Iowa.
- [363] **Demir, I.**, 'Next Generation Digital Twin Systems for Disaster Analytics and Communication', Fifth NAAHDRI Research Incubator Event, February 10, 2023, Online (virtual).

- [364] **Demir, I.**, 'AI and Machine Learning Applications for Operational Flood Forecasting and Communication', Google Flood Forecasting Meets Machine Learning Workshop, January 11, 2023, Virtual.
- [365] Ewing, G., **Demir, I.**, 'A Web-Based Generalized Hydrological Modelling Framework for Decision Support, Outreach, and Education', AGU Fall Meeting, December 12-16, 2022, Chicago, IL.
- [366] **Demir, I.**, 'Next Generation Hydroinformatics Applications for Scientific Computing and Communication', AGU Fall Meeting, December 12-16, 2022, Chicago, IL.
- [367] Li, Z., **Demir, I.**, 'U-Net-Based Semantic Classification for Flood Extent Extraction Using SAR Images: A Case Study for 2019 Central US Flooding', AGU Fall Meeting, December 12-16, 2022, Chicago, IL.
- [368] Erazo, C., Sermet, Y., Molkenhuth, F. and **Demir, I.**, 'HydroLang: An open-source web-based programming framework for hydrological sciences', AGU Fall Meeting, December 12-16, 2022, Chicago, IL.
- [369] Alabbad, Y., Yildirim, E., **Demir, I.**, 'A Web-based Analytical Urban Flood Damage and Loss Estimation System', AGU Fall Meeting, December 12-16, 2022, Chicago, IL.
- [370] Merwade, V., Minear, J.T., Muste, M., Cox, A., **Demir, I.**, Dey, S., Liang, C.Y. and Sermet, Y., 'Introducing RIMORPHIS, the River Morphology Information System: An Online Community Resource for River Morphology Data and Tools', AGU Fall Meeting. Dec. 14, 2022, Chicago, IL.
- [371] Erazo, C., Sermet, Y., **Demir, I.**, HydroLang Markup Language: Community-Driven Web Components for Hydrological Analyses, 3rd IAHR Young Professionals Congress, Nov 28 - Dec 02, 2022, Online (virtual).
- [372] Erazo, C., Sermet, Y., Molkenhuth, F., **Demir, I.**, 'HydroLang: An Open-Source Web-Based Programming Framework for Hydrological Sciences', Iowa Water Conference, September 28-29, 2022, Dubuque, IA.
- [373] Alabbad, Y., Mount, J., Campbell, A., **Demir, I.**, 'Assessment of Transportation System Disruption and Accessibility to Critical Amenities During Flooding: Iowa Case Study', Iowa Water Conference, September 28-29, 2022, Dubuque, IA.
- [374] Ewing, G., **Demir, I.**, 'Interactive Environmental Modelling on Client-Side Web Systems; An Outreach and Educational Case Study', Iowa Water Conference, September 28-29, 2022, Dubuque, IA.
- [375] Demiray, B.Z., Sermet, Y., Yildirim, E., **Demir, I.**, 'FloodGame: A Serious Game on Flood Mitigation for K-12 and Public Education', Iowa Water Conference, September 28-29, 2022, Dubuque, IA.
- [376] Sermet, Y., **Demir, I.**, 'Next-Generation Environmental Information Systems using Immersive Technologies and Artificial Intelligence', Young Professionals Workshop - Lowering Flood Risk by Increasing Resilience: Next Generation Vision for Flood Science and Action, August 9-10, 2022, Iowa City, IA.
- [377] **Demir, I.**, 'Next Generation Web-based Digital Twin Systems for Hydrological Research and

- Education', HIC 2022: 14th International Conference on Hydroinformatics, July 4-8, 2022, Bucharest, Romania.
- [378] **Demir, I.**, Sermet, S., Muste, M., 'A Web-Based Cyberinfrastructure for River Morphology Data Analytics and Exploration', HIC 2022: 14th International Conference on Hydroinformatics, July 4-8, 2022, Bucharest, Romania.
- [379] Cikmaz, A.B., Yildirim, E., **Demir, I.**, 'Flood Risk Assessment and Quantification for Iowa Using Fuzzy Analytical Hierarchy Process', HIC 2022: 14th International Conference on Hydroinformatics, July 4-8, 2022, Bucharest, Romania.
- [380] Quintero, F., Li, Z., **Demir, I.**, Grout, T., Bates, B., 'Understanding the Mechanisms Behind the Performance of HAND Flood Inundation Model', Frontiers in Hydrology Meeting, June 19-24, 2022, San Juan, Puerto Rico.
- [381] Ewing, G., **Demir, I.**, 'Device-Agnostic Environmental Modelling Framework for The Web', Frontiers in Hydrology Meeting, June 19-24, 2022, San Juan, Puerto Rico.
- [382] Ewing, G., Mantilla, R., Krajewski, W., **Demir, I.**, 'A Client-Side Web Framework for Rainfall-Runoff Modelling in a Hybrid Learning Context', Frontiers in Hydrology Meeting, June 19-24, 2022, San Juan, Puerto Rico.
- [383] Sermet, S., Demiray, B.Z., Yildirim, E., **Demir, I.**, 'FloodGame: A Serious Game on Flood Mitigation for K-12 and Public Education', Frontiers in Hydrology Meeting, June 19-24, 2022, San Juan, Puerto Rico.
- [384] Sermet, S., **Demir, I.**, 'Camera-Based Intelligent Stream Stage Sensing', Frontiers in Hydrology Meeting, June 19-24, 2022, San Juan, Puerto Rico.
- [385] Sermet, S., **Demir, I.**, Muste, M., 'A Web-Based Visualization and Analytics Cyberinfrastructure for River Morphology', Frontiers in Hydrology Meeting, June 19-24, 2022, San Juan, Puerto Rico.
- [386] Cox, A., Muste, M., Merwade, V., **Demir, I.**, Minear, T., 'Engaging the Earth Science Community for Developing a River Morphology Information System (RIMORPHIS)', UCOWR/NIWR Annual Water Resources Conference, June 14-16, 2022, Greenville, SC.
- [387] **Demir, I.**, 'Next Generation Web-based Digital Twin Systems for Flood Risk Management', AWRA 2022 Spring Conference, April 25-27, 2022, Tuscaloosa, AL.
- [388] Ewing, G., **Demir, I.**, 'WebHLM: A Client-Side Web Environment for Hydrologic Modelling and Education', Research Open House, April 15, 2022, Iowa City, IA.
- [389] Alabbad, Y., **Demir, I.**, 'Comprehensive Flood Vulnerability Analysis in Urban Communities: Iowa Case Study', Research Open House, April 15, 2022, Iowa City, IA.
- [390] **Demir, I.**, 'Next Generation Web-based Digital Twin Systems for Hydrological Research and Education', AGU Fall Meeting, December 13-17, 2021, New Orleans, LA.
- [391] Li, Z., **Demir, I.**, 'A Comprehensive Web-based System for Flood Inundation Mapping and Analysis Based on Height Above Nearest Drainage', AGU Fall Meeting, December 13-17, 2021, New Orleans, LA.

- [392] Yildirim, E., **Demir, I.**, 'Agricultural Flood Vulnerability Assessment and Risk Quantification in Iowa', AGU Fall Meeting, December 13-17, 2021, New Orleans, LA.
- [393] Xiang, Z., **Demir, I.**, 'Fully Distributed Rainfall-Runoff Modeling Using Spatial-Temporal Graph Neural Network', AGU Fall Meeting, December 13-17, 2021, New Orleans, LA.
- [394] Ewing, G., Mantilla, R., Krajewski, W., **Demir, I.**, 'WebHLM: A Client-Side Web Environment for Hydrologic Modeling and Education', AGU Fall Meeting, December 13-17, 2021, New Orleans, LA.
- [395] Sermet, Y., **Demir, I.**, 'Camera-Based Intelligent Stream Stage Sensing for Citizen Science Applications', AGU Fall Meeting, December 13-17, 2021, New Orleans, LA.
- [396] Sermet, Y., **Demir, I.**, Muste, M., 'A Web-Based Visualization and Analytics Cyberinfrastructure for River Morphology', AGU Fall Meeting, December 13-17, 2021, New Orleans, LA.
- [397] Merwade, V., et al., **Demir, I.**, 'RIMORPHIS: River Morphology Information System', AGU Fall Meeting, December 13-17, 2021, New Orleans, LA.
- [398] Xiang, Z., **Demir, I.**, 'A Regional Semi-Distributed Streamflow Model Using Deep Learning', 2021 Annual Water Resources Conference, November 8-11, 2021, Kissimmee, FL.
- [399] **Demir, I.**, 'Uncertainty in Visual Analytics Applications in Hydroinformatics', 2021 IEEE Visualization Conference, October 24-29, 2021, Virtual.
- [400] Demiray, B.Z., Sermet, Y., Yildirim, E., **Demir, I.**, 'FloodGame: A Serious Game on Flood Mitigation for K-12 and Public Education', WaterSmart Innovations (WSI) Conference, October 6-7, 2021, Las Vegas, NV.
- [401] **Demir, I.**, 'Next Generation Data-Driven Flood Forecasting, Mapping and Analytics Framework on Client-side Web Systems', Google Flood Forecasting Workshop, October 5-7, 2021, Virtual.
- [402] Sit, M. A., Seo, B., **Demir, I.**, 'IowaRain: A Statewide Rain Event Dataset Based on Weather Radars and Quantitative Precipitation Analysis', NOAA Workshop on "Leveraging AI in Environmental Sciences", September 13-17, 2021, Boulder, Colorado & Virtual.
- [403] Xiang, Z., Demiray, B. Z., Sit, M. A., **Demir, I.**, 'WaterBench: A Large-scale Benchmark Dataset for Data-Driven Streamflow Forecasting', NOAA Workshop on "Leveraging AI in Environmental Sciences", September 13-17, 2021, Boulder, Colorado & Virtual.
- [404] Sit, M. A., Demiray, B. Z., **Demir, I.**, 'Short-term Hourly Streamflow Prediction with Graph Convolutional GRU Networks', NOAA Workshop on "Leveraging AI in Environmental Sciences", September 13-17, 2021, Boulder, Colorado & Virtual.
- [405] Xiang, Z., **Demir, I.**, 'Fully Distributed Rainfall-Runoff Modeling Using Spatial-Temporal Graph Neural Network', NOAA Workshop on "Leveraging AI in Environmental Sciences", September 13-17, 2021, Boulder, Colorado & Virtual.
- [406] Sermet, Y., **Demir, I.**, 'Next-Generation Environmental Information Systems using Immersive Technologies and Artificial Intelligence', NOAA Workshop on "Leveraging AI in Environmental Sciences", September 13-17, 2021, Boulder, Colorado & Virtual.

- [407] Jones, C., **Demir, I.**, et al. 'Cyberinfrastructure Framework to Support Large-Scale Water-Quality Data Integration, Analyses, and Visualization in The Upper Mississippi River Basin (UMRB)', Iowa Water Conference, April 6-7, 2021, Virtual.
- [408] Li, Z., Mount, J., **Demir, I.**, 'An Interactive Real-Time Flood Mapping Framework on Web Systems', Iowa Water Conference, April 6-7, 2021, Virtual.
- [409] Sermet, Y., **Demir, I.**, 'GeospatialVR: A Web-based Virtual Reality Framework for Collaborative Disaster Simulations', Disaster PRIMR 2021, Jan 31 – Feb 4, 2021, Virtual.
- [410] **Demir, I.**, 'Next Generation Intelligent Information and Communication Systems for Flood Preparedness and Mitigation', Disaster PRIMR 2021, Jan 31 – Feb 4, 2021, Virtual.
- [411] **Demir, I.**, 'Next Generation Web Technologies for Hydrological Applications on Client-side Systems', AGU Fall Meeting, December 7-11, 2020, San Francisco, CA.
- [412] Yildirim, E., **Demir, I.**, 'Flood Mitigation and Data Analytics Framework: Middle Cedar Case Study', AGU Fall Meeting, December 7-11, 2020, San Francisco, CA.
- [413] Ewing, G., **Demir, I.**, 'Water Ethics Web Engine - A Web-Based Ethical Decision-Making Framework', AGU Fall Meeting, December 7-11, 2020, San Francisco, CA.
- [414] Merwade, V., Muste, M., **Demir, I.**, Cox, A., Minear, T., 'RiverMorph: A Web Platform for Enabling River Morphology Research', AGU Fall Meeting, December 7-11, 2020, San Francisco, CA.
- [415] Sermet, Y., **Demir, I.**, 'GeospatialVR: A Web-based Virtual Reality Framework for Collaborative Environmental Simulations', AGU Fall Meeting, December 7-11, 2020, San Francisco, CA.
- [416] Xiang, Z., **Demir, I.**, 'Generalized Streamflow Forecast Model using Deep Learning', AGU Fall Meeting, December 7-11, 2020, San Francisco, CA.
- [417] Chi, N.-C., Nakad, L., Fu, Y.-K., **Demir, I.**, Gilbertson-White, S., Herr, K., Demir, G., Parker Oliver, D., Hagiwara, Y., 'Shared Decision-making for Family Caregivers Managing Patients' Pain in Hospice Care: A Web App Approach'. American Medical Informatics Annual Symposium, American Medical Informatics Association, Nov 14-18, 2020, Chicago, IL.
- [418] Sermet, Y., **Demir, I.**, 'GeospatialVR: A Web-based Virtual Reality Framework for Collaborative Environmental Simulations', VRST 2020 - ACM Symposium on Virtual Reality Software and Technology, November 1-4, 2020, Ottawa, Canada.
- [419] Xiang, Z., **Demir, I.**, 'An Application of Deep Learning-Based Streamflow Forecasting in the State of Iowa', AWRA Water Resources Conference, November 2020.
- [420] Chi, N.-C., Nakad, L., Fu, Y.-K., **Demir, I.**, Gilbertson-White, S., Herr, K., Demir, G., Burnside, L. 'Tailored Strategies and Shared Decision-making for Caregivers Managing Patients' Pain: A Web App'. The Gerontological Society of America 2020 Annual Scientific Meeting, Nov 4-8, 2020, Philadelphia, PA.
- [421] Sermet, Y., **Demir, I.**, 'Virtual and Augmented Reality Applications for Disaster Planning and Education', ESRI Water GIS Conference, September 23-25, 2020.

- [422] Sermet, Y., **Demir, I.**, 'Next-Generation Environmental Information Systems using Immersive Technologies and Artificial Intelligence', 2020 ACM Richard Tapia Conference, September 16-19, 2020.
- [423] Muste, M., **Demir, I.**, Merwade, V., Wood, M., Boyd, P., 'RIO: Data Model for Supporting River Research and Management', 2020 AWRA Geospatial Water Technology Conference, August 4-13, 2020, Austin, TX.
- [424] **Demir, I.**, '21st Century Technologies to Prepare for Flooding', Soil and Water Conservation Society's 75th International Annual Conference, July 27-29, 2020.
- [425] **Demir, I.**, 'Flooding & Transportation Resilience: Future of Intelligent Risk Analytics & Communication', Nebraska DOT Future of Transportation Technology Forum, July 1, 2020.
- [426] **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-Side Web Systems', 2020 ASFPM Annual National Conference, June 9-11, 2020, Fort Worth, TX.
- [427] Luna, D., Chen, R., Yuan, C., Liang, Y., Liang, X., Bales, J., Castronova, A.M., **Demir, I.**, Hooper, R.P., Krajewski, W.F., Lin, L., Mantilla, R., Pamidighantam, S., Song, F., Zhang, Y., 'CyberWater—An open and sustainable framework for diverse data and model integration', AGU Fall Meeting, December 9-13, 2019, San Francisco, CA.
- [428] Hu, A., Li, Z., Manazir, A., **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-Side Web Systems', AGU Fall Meeting, December 9-13, 2019, San Francisco, CA.
- [429] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Sustainable Environmental Management', AGU Fall Meeting, December 9-13, 2019, San Francisco, CA.
- [430] Xiang, Z., **Demir, I.**, 'Sequence-to-Sequence Learning with Deep Neural Networks in Rainfall-Runoff Modeling in Iowa', AGU Fall Meeting, December 9-13, 2019, San Francisco, CA.
- [431] **Demir, I.**, Lee, J. S., 'An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin', MBDH All Hands Meeting, October 29-30, 2019, Rosemont, IL.
- [432] Langel, R., Sit, M.A., Cwiertny, D.M., **Demir, I.**, 'The Iowa Well Forecasting System (IWFoS): A web application to predict aquifers and groundwater quality', IGWA 2019 Fall Conference, October 17, 2019, Cedar Rapids, IA.
- [433] Sermet, Y., **Demir, I.**, 'Virtual Stage Sensors: Alternative Approaches for Smartphone-Based Crowdsourced Water Level Measurements', Tapia 2019 - ACM Richard Tapia Celebration of Diversity in Computing, September 18-21, 2019, San Diego, CA.
- [434] Hu, A., Li, Z., Manazir, A., **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-Side Web Systems', CUAHSI Informatics Conference, July 29-31, 2019, Provo, UT.
- [435] Sermet, Y., **Demir, I.**, 'Flood Action VR: A Virtual Reality Framework for Disaster Awareness and Emergency Response Training', ACM SIGGRAPH 2019, July 28 - August 1, 2019, Los Angeles, CA.
- [436] Powell, J., Karpatne, A., Garijo, D., Martin, J., Hardesty-Lewis1, D., Marchetto, P., Cleveland, S., Daniels, M., Athanasiadis, I., Keys, P., **Demir, I.**, Peckham, S., Hill, M., Ebert-Uphoff, I., Pennington, D., Jacobs, G., Gil, Y., Pierce, S., 'Creating Sustainable Knowledge Centric

- Communities with Artificial Intelligence Applications to Earth Science Problems’, EarthCube Annual Meeting, June 12-14, 2019, Denver, CO.
- [437] **Demir, I.**, Krajewski, W. F., ‘Next Generation Information and Communication Systems for Flooding’, ASFPM Annual National Conference, May 19-23, 2019, Cleveland, OH.
- [438] Sermet, Y., **Demir, I.**, ‘Virtual Stage Sensors: Alternative Approaches for Smartphone-Based Crowdsourced Water Level Measurements’, The 17th Annual College of Engineering Research Open House, April 11, 2019, Iowa City, IA, USA.
- [439] **Demir, I.**, ‘Iowa Flood Information System Demo and Workshop’, Iowa Water Conference, March 12-13, 2019, Ames, IA.
- [440] **Demir, I.**, ‘Intelligent Systems and Machine Learning Applications in Environmental Sciences’, UIOWA Informatics Showcase, February 15, 2019, Iowa City, IA, USA.
- [441] Sit, M. A., Seo, B. C., Krajewski, W. F., **Demir, I.**, ‘Deep Neural Networks Based Augmentation of Rainfall Data’, AMS Annual Meeting, January 6-10, 2019, Phoenix, AZ.
- [442] Seo, B. C., Keem, M., **Demir, I.**, Krajewski, W. F., ‘A Cloud Infrastructure for Rainfall Metadata Search and Product Generation Based on the Big Data of NEXRAD’, AMS Annual Meeting, January 6-10, 2019, Phoenix, AZ.
- [443] **Demir, I.**, Demiray, B. Z., Sit, M. A., Yildirim, E., ‘Enhancing Lidar Data using Generative Adversarial Networks’, AGU Fall Meeting, December 10-14, 2018, Washington, DC.
- [444] **Demir, I.**, Sermet, Y., ‘Integration of Intelligent Systems and Novel Visualization Techniques in Data-Driven Geoscience Education’, AGU Fall Meeting, December 10-14, 2018, Washington, DC.
- [445] **Demir, I.**, Xiang, Z., ‘Runoff Prediction using Long-Short Term Memory Model’, AGU Fall Meeting, December 10-14, 2018, Washington, DC.
- [446] **Demir, I.**, Krajewski, W. F., Jones, C. S., Schilling, K., Weber, L. J., Lee, J. S., Warner, R. E., Gassman, P. W., ‘An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin’, MBDH All Hands Meeting, November 6-7, 2018, Cleveland, OH.
- [447] Yildirim, E., **Demir, I.**, ‘Integrated Decision Support System for Flood Mitigation Practices’, Upper Mississippi Conference, October 24-25, 2018, Moline, IL.
- [448] Chen, P., Campbell, A.M., **Demir, I.**, ‘A Generalized Routing and Accessibility Analysis System for Flooding: Iowa Testbed’, INFORMS Annual Meeting, September 19-22, 2018, Orlando, FL.
- [449] Sermet, Y., **Demir, I.**, ‘Flood Action VR: A Virtual Reality Framework for Disaster Awareness and Emergency Response Training’, Tapia 2018 - ACM Richard Tapia Celebration of Diversity in Computing, September 19-22, 2018, Orlando, FL.
- [450] Sit, M., **Demir, I.**, ‘Artificial Neural Networks Based Flood Forecasting’, Tapia 2018 - ACM Richard Tapia Celebration of Diversity in Computing, September 19-22, 2018, Orlando, FL.
- [451] Sermet, Y., **Demir, I.**, ‘Flood AI: An Intelligent Systems for Discovery and Communication of Disaster Knowledge’, *9th International Congress on Environmental Modelling and Software*, June 24-28, 2018, Fort Collins, CO.

- [452] **Demir, I.**, 'Disaster Communication Using Intelligent Systems, Holograms and Virtual Reality', *Moving Forward: Pathways to Building Community Resilience, National Academy of Science*, June 19, 2018, Cedar Rapids, IA.
- [453] Gariyo, D., Martin, J., Freed, N., Pierce, S., Gil, Y., Thompson, D. R., **Demir, I.**, Ebert-Uphoff, I., 'IS-GEO - A Research Coordination Network on Intelligent Systems Research to Support the Geosciences', *EarthCube All Hands Meeting (AHM)*, June 6-8, 2018, Washington, DC.
- [454] **Demir, I.**, 'Disaster Communication Using Intelligent Systems, Holograms and Virtual Reality', 2018 GeoRodeo, May 4, 2018, Austin, TX, USA.
- [455] Yildirim, Enes, **Demir, I.**, 'Integrated Disaster Decision Support and Visualization System', *The 15th Annual College of Engineering Research Open House*, April 12, 2018, Iowa City, IA, USA.
- [456] Sermet, Y., **Demir, I.**, 'Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence: Flood Expert', *The 15th Annual College of Engineering Research Open House*, April 12, 2018, Iowa City, IA, USA.
- [457] **Demir, I.**, 'Communication of Extreme Events using Intelligent Systems and Visualization', UIOWA Informatics Showcase, March 23, 2018, Iowa City, IA, USA.
- [458] **Demir, I.**, Sermet, Y., Krajewski, W.F., 'An Intelligent System for Discovery and Communication of Extreme Events', AMS Annual Meeting, January 7-11, 2018, Austin, TX, USA.
- [459] Zanchetta, A.D.L., Mantilla, R., **Demir, I.**, Krajewski, W.F., 'IFIS Model-Plus: A Web-Based GUI for Visualization, Comparison and Evaluation of Distributed Flood Forecasts and Hindcasts', AGU Fall Meeting, December 11-15, 2017, New Orleans, LA, USA.
- [460] **Demir, I.**, Sermet, Y., 'Flood AI: An Intelligent Systems for Discovery and Communication of Disaster Knowledge', AGU Fall Meeting, December 11-15, 2017, New Orleans, LA, USA.
- [461] Ebert-Uphoff, I., Thompson, D.R., **Demir, I.**, Gel, Y.R., Hill, M., Karpatne, A., Guereque, M., Kumar, V., Cabral-Cano, E., Smyth., P., 'Building Bridges Between Geoscience and Data Science through Benchmark Data Sets', AGU Fall Meeting, December 11-15, 2017, New Orleans, LA, USA.
- [462] Sermet, Y., **Demir, I.**, 'Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence: Flood AI Alpha', Tapia Conference, September 20-23, 2017, Atlanta, GA, USA.
- [463] Zanchetta, A.D.L., Mantilla, R., **Demir, I.**, 'IFIS Model-Plus: A Web-Based GUI for Visualization, Comparison and Evaluation of Distributed Hydrologic Model Outputs', 2017 CUAHSI Conference on Hydroinformatics, July 25-27, 2017, Tuscaloosa, AL, USA.
- [464] **Demir, I.**, Sermet, Y., 'Intelligent Systems and Knowledge Discovery for Data-Driven Communication and Education', 2017 CUAHSI Conference on Hydroinformatics, July 25-27, 2017, Tuscaloosa, AL, USA.
- [465] Sermet, Y., Sit, M.A., **Demir, I.**, 'Benchmark of Client and Server-Side Catchment Delineation Approaches on Web-Based Systems', 2017 CUAHSI Conference on Hydroinformatics, July 25-27, 2017, Tuscaloosa, AL, USA.

- [466] Muste, M., **Demir, I.**, 'Prototypes for Flood Information and Decision-Support Systems', Global Flood Partnership 2017 Conference, June 27-29, 2017, Tuscaloosa, AL, USA.
- [467] Gil, Y., ..., **Demir, I.**, et al., 'The OntoSoft Geosciences Paper of the Future Initiative: Promoting Best Practices for Digital Scholarship, Reproducible Research, and Open Science', EarthCube All Hands Meeting, June 7-9, 2017, Seattle, WA, USA.
- [468] Sermet, Y., Sit, M., **Demir, I.**, 'Real-Time Web-Based Watershed Delineation Using JavaScript, Python and WebGL', AWWA Annual Conference and Exposition (ACE17), June 11-14, 2017, Philadelphia, PA, USA.
- [469] Yildirim, E., Sermet, Y., **Demir, I.**, 'Flood Emergency Decision Support System and Loss Estimation on the Web using HAZUS', 15th Annual College of Engineering Research Open House, April 6, 2017, Iowa City, IA, USA.
- [470] Yildirim, E., Sermet, Y., **Demir, I.**, 'Flood Loss Estimation and Decision Support Framework on the Web', 19th Annual James F. Jakobsen Memorial Graduate Conference, March 25, 2017, Iowa City, IA, USA.
- [471] Sermet, Y., Agliamzanov, R., Sit, M., **Demir, I.**, 'Scientific Computations on GPU on The Web: A Use Case of Distributed Volunteer Computing for Hydrological Applications', *GPU Technology Conference*, May 8-11, 2017, San Jose, CA, USA.
- [472] **Demir, I.**, Sermet, Y., 'Intelligent Systems and Knowledge Discovery for Communication of Extreme Weather and Disaster Preparedness', *GPU Technology Conference*, May 8-11, 2017, San Jose, CA, USA.
- [473] Sermet, Y., Sit, M., **Demir, I.**, 'Benchmark of Client and Server-Side Catchment Delineation Approaches on Web-Based Systems', *Iowa Water Conference*, March 22-23, 2017, Ames, IA, USA.
- [474] Yildirim, E., Sermet, Y., **Demir, I.**, 'Web-based Flood Hazard Estimation and Emergency Management', *Iowa Water Conference*, March 22-23, 2017, Ames, IA, USA.
- [475] Xu, H. Hameed, H., Windsor, M., Smith, J., Hunemuller, T., Muste, M., **Demir, I.**, Stevenson, M. B., 'An Iowa Prototype for a Generic Watershed Decision Support System', *Iowa Water Conference*, March 22-23, 2017, Ames, IA, USA.
- [476] Seo, B.C., **Demir, I.**, Keem, M., Goska, R., Krajewski, W. F., 'Cloud-based NEXRAD Data Processing and Analysis for Hydrologic Applications', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [477] Villanueva, P., Sermet, Y., **Demir, I.**, 'Virtual Stream Stage Sensor Using Projected Geometry and Augmented Reality for Crowdsourcing Citizen Science Applications', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [478] **Demir, I.**, Sermet, Y., 'Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence: Flood AI Alpha', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [479] Yu, X., Gil, Y., David, C., **Demir, I.**, Essawy, B., Fulweiler, R., Goodall, J., Karlstrom, L., Lee, H., Mills,

- H., Pierce, S., Pope, A., Tzeng, M., Villamizar, S., 'The Geoscience Paper of the Future: Best Practices for Documenting and Sharing Research from Data to Software to Provenance', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [480] Hossein-Hosseiny, S. M., Zarzar, C., Gomez, M., Siddique, R., Smith, V., Mejia, A., **Demir, I.**, 'Quantifying Uncertainty in Flood Inundation Mapping Using Streamflow Ensembles and Multiple Hydraulic Modeling Techniques', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [481] Sit, M.A., Sermet, Y., **Demir, I.**, 'Flood and Weather Monitoring Using Real-time Twitter Data Streams', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [482] Sermet, Y., Sit, M.A., **Demir, I.**, 'Benchmark of Client and Server-Side Catchment Delineation Approaches on Web-Based Systems', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [483] Yildirim, E., Sermet, Y., **Demir, I.**, 'Flood Damage and Loss Estimation for Iowa on Web-based Systems using HAZUS', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [484] E. Yildirim, **Demir, I.**, 'Real Time Flood Loss Estimation and Emergency Decision Support Systems on the Web', *CyberGIS'16 - Third International Conference on CyberGIS and Geospatial Data Science*, July 26-28, 2016, Urbana, IL, USA.
- [485] Y. Sermet, **Demir, I.**, 'Real-Time Web-Based Watershed Delineation Using JavaScript, Python and WebGL', *CyberGIS'16 - Third International Conference on CyberGIS and Geospatial Data Science*, July 26-28, 2016, Urbana, IL, USA.
- [486] Xu, H., Hameed, H., **Demir, I.**, Muste, M., Smith, J., Stevenson, M.B., Hunemuller, T., 'Visualization Platform for Collaborative Modeling', *2016 AWRA Summer Specialty Conference, GIS and Water Resources IX*, July 11-13, 2016, Sacramento, CA, USA.
- [487] Muste, M., **Demir I.**, Xu, H., Windsor, M., Hameed, H., 'Iowa Watershed Decision Support System: Prototype DSS for interjurisdictional collaboration in water resource management', *UIOWA Informatics Showcase*, April 22, 2016, Iowa City, IA, USA.
- [488] A.D.L. Zanchetta, R. Mantilla, **Demir, I.**, 'An Interface for Comparison of Iowa Flood Center Simulation Products', *UIOWA Informatics Showcase*, April 22, 2016.
- [489] Y. Sermet, **Demir, I.**, 'Computational Knowledge Engine for Hydrological Systems using Semantic Web', *UIOWA Informatics Showcase*, April 22, 2016, Iowa City, IA, USA.
- [490] E. Yildirim, **Demir, I.**, 'Real-Time Emergency Response and Flood Loss Estimation via HAZUS-MH on the Web', *UIOWA Informatics Showcase*, April 22, 2016, Iowa City, IA, USA.
- [491] **Demir, I.**, 'Next Generation Hydroinformatics Systems for Big Data Management, Analysis, and Visualization', *UIOWA Informatics Showcase*, April 22, 2016, Iowa City, IA, USA.
- [492] **Demir, I.**, Krajewski, W.F., 'GPGPU Applications for Hydrological and Atmospheric Simulations

- and Visualizations on the Web’, *GPU Technology Conference*, April 4-7, 2016, San Jose, CA, USA.
- [493] Sermet, Y., **Demir, I.**, ‘Client-side GPGPU Web Application for Catchment Delineation and Watershed Segmentation’, *GPU Technology Conference*, April 4-7, 2016, San Jose, CA, USA.
- [494] Sermet, Y., **Demir, I.**, Krajewski, W.F., ‘Voice-enabled Knowledge Engine using Ontologies and Natural Language Processing for Weather and Hydrological Data’, *Iowa Water Conference*, March 23-24, 2016, Ames, IA, USA.
- [495] Sit, M.A., Sermet, Y., **Demir, I.**, Krajewski, W.F., ‘Real-time Social Media Analysis for Flood Preparedness and Response’, *Iowa Water Conference*, March 23-24, 2016, Ames, IA, USA.
- [496] Onkal-Engin, G., **Demir, I.**, Adiller, A., Çelen, M., Dogan, A., Varank, G., Engin, S.N., ‘Web-based Watershed Information Systems – Advantages for Decision Support Systems’, *International Water Conference 2016 on Water Resource in Arid areas: The Way Forward*, March 13-16, 2016, Muscat, Oman.
- [497] **Demir, I.**, Sermet, Y., Krajewski, W., ‘Voice-enabled Knowledge Engine using Ontologies and Natural Language Processing for Weather and Hydrological Data’, in *Proceedings of 32th Conference on Environmental Information Processing Technologies*, 2016 AMS Annual Meeting, January 10-14, 2016, New Orleans, LA, USA.
- [498] **Demir, I.**, Krajewski, W., ‘Novel Cyberinfrastructure Systems for Scientific Visualization of Large-Scale Radar and Satellite Data on the Web’, in *Proceedings of 32th Conference on Environmental Information Processing Technologies*, 2016 AMS Annual Meeting, January 10-14, 2016, New Orleans, LA, USA.
- [499] Sit, M.A., Sermet, Y., **Demir, I.**, ‘Real-time Social Media Analysis for Flood Monitoring and Prediction - Twitter Use Case’, *American Geophysical Union (AGU) Virtual Showcase*, December 2015, Washington, DC, USA.
- [500] Sermet, Y., **Demir, I.**, ‘A Comprehensive Flood Ontology for Environmental Cyberinfrastructure Systems’, *American Geophysical Union (AGU) Virtual Showcase*, December 2015, Washington, DC, USA.
- [501] **Demir, I.**, Szczepanek, R., ‘Analysis and Benchmark of Hydrological Network Representation Models for Improved Access and Query in Web-based System’, *American Geophysical Union (AGU) Fall Meeting*, December 14-18, 2015, San Francisco, CA, USA.
- [502] **Demir, I.**, Sermet, Y., Krajewski, W.F., ‘Voice-enabled Knowledge Engine using Flood Ontology and Natural Language Processing’, *American Geophysical Union (AGU) Fall Meeting*, December 14-18, 2015, San Francisco, CA, USA.
- [503] **Demir, I.**, ‘Novel Web-based Education Platforms for Information Communication utilizing Gamification, Virtual and Immersive Reality’, *American Geophysical Union (AGU) Fall Meeting*, December 14-18, 2015, San Francisco, CA, USA.
- [504] Gil, Y., Duffy, C., Mattmann, C., Robinson, E., David, C., **Demir, I.**, Essawy, B., Fulweiler, R., Goodall, J., Karlstrom, L., Lee, H., Mills, H., Oh, J., Pierce, S., Pope, A., Tzeng, M., Venayagamoorthy, K., Villamizar, S., Yu, X., ‘The Geoscience Paper of the Future Initiative:

- Training Scientists in Best Practices of Software Sharing', *3rd Workshop on Sustainable Software for Science Practice and Experiences (WSSSPE3)*, September 28-29, 2015, Boulder, CO, USA.
- [505] Weber, L. J., Krajewski, W., **Demir, I.**, 'Iowa Flood Center and Iowa Nutrient Research Center: Critical Resources for Improved Watershed Resiliency and Decision-Making', *3rd CUAHSI Conference on HydroInformatics. Model and Data Interoperability: From Theory to Practice*, July 15-17, 2015, Tuscaloosa, AL, USA.
- [506] **Demir, I.**, 'Novel Cyberinfrastructure Systems for Scientific Visualization of Large-Scale Environmental Observation and Simulation Data', *3rd CUAHSI Conference on HydroInformatics. Model and Data Interoperability: From Theory to Practice*, July 15-17, 2015, Tuscaloosa, AL, USA.
- [507] **Demir, I.**, Krajewski, W., 'Towards an Interoperable Flood Preparedness and Response Cyberinfrastructure', *3rd CUAHSI Conference on HydroInformatics. Model and Data Interoperability: From Theory to Practice*, July 15-17, 2015, Tuscaloosa, AL, USA.
- [508] **Demir, I.**, 'Scientific Visualization of Large-Scale Geospatial Data using Web Technologies', *2015 Unidata Users Workshop: Data-Driven Geoscience: Applications, Opportunities, Trends, and Challenges*, June 22-25, 2015, Boulder, CO, USA.
- [509] **Demir, I.**, Szczepanek, R., 'Benchmark Toolkit for Hydrological Network Representation Models', *NSF EarthCube All Hands Meeting, May 27-29, 2015, Arlington, VA, USA*.
- [510] Gil, Y., **Demir, I.**, Mills, H., Oh, J., Pierce, S., Tzeng, M., Yu, X., Robinson, E., 'Geoscience Papers of the Future: The Importance of Software Sharing for Science Reproducibility', *NSF EarthCube All Hands Meeting, May 27-29, 2015, Arlington, VA, USA*.
- [511] **Demir, I.**, 'Scientific Visualization of Large-Scale Geospatial Data using Web Technologies', *NSF EarthCube All Hands Meeting, May 27-29, 2015, Arlington, VA, USA*.
- [512] **Demir, I.**, 'Towards an Integrated Flood Preparedness and Response in Iowa using Cyberinfrastructure', *127th Iowa Academy of Science (IAS) Annual Meeting*, April 17-18, 2015, Iowa City, IA, USA.
- [513] **Demir, I.**, 'Game-based Learning and Simulation System using Web Technologies and GPU', *GPU Technology Conference*, March 17-20, 2015, San Jose, CA, USA.
- [514] **Demir, I.**, Agliamzanov, R., 'Web-based Distributed Voluntary Computing for Large Scale Scientific Computations using GPU', *GPU Technology Conference*, March 17-20, 2015, San Jose, CA, USA.
- [515] **Demir, I.**, 'Towards an Integrated Flood Preparedness and Response in Iowa: Centralized Data access, Analysis, and Visualization', *Iowa Water Conference, March 2-3, 2015, Ames, IA, USA*.
- [516] **Demir, I.**, 'A Web-based Distributed Voluntary Computing Platform for Large Scale Hydrological Computations', *Iowa Water Conference, March 2-3, 2015, Ames, IA, USA*.
- [517] **Demir, I.**, Agliamzanov, R., 'A Web-based Distributed Voluntary Computing Platform for Large Scale Hydrological Computations', *American Geophysical Union (AGU) Fall Meeting*, December 15-19, 2014, San Francisco, CA, USA.
- [518] **Demir, I.**, 'Interactive Web-based Hydrological Simulation System as an Education Platform using

- Augmented and Immersive Reality', *American Geophysical Union (AGU) Fall Meeting*, December 15-19, 2014, San Francisco, CA, USA.
- [519] **Demir, I.**, Krajewski, W., 'Towards an Integrated Flood Preparedness and Response: Centralized Data Access, Analysis, and Visualization', *American Geophysical Union (AGU) Fall Meeting*, December 15-19, 2014, San Francisco, CA, USA.
- [520] **Demir, I.**, Goska, R., Krajewski, W., 'Field Experiment Planning and Data Management using Cyberinfrastructure', *CUAHSI Virtual Workshop: Field Data Management Solutions*, October 30, 2014, USA.
- [521] Haltas, I., **Demir, I.**, 'Toward a Flood Information System (TABIS) for Turkey', 11th International Congress on Advances in Civil Engineering - ACE 2014, October 21-25, 2014, Istanbul, TURKEY.
- [522] Haltas, I., **Demir, I.**, 'Turkey Flood Information System (TABIS)', *Remote Sensing and Geographical Information Systems (UZAL-CBS)*, October 14-17, 2014, Istanbul, TURKEY. [Turkish]
- [523] **Demir, I.**, 'Novel Scientific Visualization Techniques for Communicating Environmental Information', *Iowa Space Grant Consortium Regional Meeting*, September 19-20, 2014, Des Moines, IA, USA.
- [524] Haltas, I., **Demir, I.**, 'Flood Information System (TABIS) for Turkey', 6th International Conference on Flood Management (ICFM6) - Floods in a Changing Environment, September 16-18, 2014, São Paulo, BRAZIL.
- [525] **Demir, I.**, 'Interactive Web-based Flood Simulation System as an Education Platform for Hydrological Concepts', *HIC 2014 – 11th International Conference on Hydroinformatics*, August 17-21, 2014, New York, NY, USA.
- [526] **Demir, I.**, Small, S., Goska, R., Keahey, K., Armstrong, P., Riteau, P., Seo, B., Mantilla, R., Krajewski, W., 'Hydroinformatics on the Cloud: Data Integration, Modeling and Information Communication for Flood Risk Management', *HIC 2014 – 11th International Conference on Hydroinformatics*, August 17-21, 2014, New York, NY, USA.
- [527] **Demir, I.**, 'Interactive Web-based Hydrological Simulation System as an Education Platform', *CUAHSI 2014 Biennial Colloquium*, July 28-30, 2014, Shepherdstown, WV, USA.
- [528] Krajewski, W., **Demir, I.**, 'An Information System for the NASA GPM Iowa Flood Studies (IFloodS) Field Campaign', *8th International Congress on Environmental Modelling and Software (iEMSs)*, June 15-19, 2014, San Diego, California, USA.
- [529] **Demir, I.**, 'Interactive Web-based Hydrological Simulation System as an Education Platform', *8th International Congress on Environmental Modelling and Software (iEMSs)*, June 15-19, 2014, San Diego, California, USA.
- [530] **Demir, I.**, 'Gesture-based Interactive Visualization of Large-Scale Data using GPU and Latest Web Technologies', *GPU Technology Conference*, March 24-27, 2014, San Jose, CA, USA.
- [531] **Demir, I.**, 'Interactive Web-based Flood Simulation System for Realistic Experiments of Flooding and Flood Damage', *Iowa Water Conference*, March 3-4, 2014, Ames, IA, USA.

- [532] **Demir, I.**, 'Interactive Visualization of Large-Scale Hydrological Data using Emerging Technologies in Web Systems and Parallel Programming', *Iowa Water Conference*, March 3-4, 2014, Ames, IA, USA.
- [533] **Demir, I.**, Krajewski, W., 'Interactive Visualization of Large-Scale Radar and Rainfall Data using Graphical Processing Unit and Latest Web Technologies', *in Proceedings of 30th Conference on Environmental Information Processing Technologies, 2014 AMS Annual Meeting*, February 2-6, 2014, Atlanta, GA, USA.
- [534] **Demir, I.**, Krajewski, W., 'Interactive Visualization of Large-Scale Hydrological Data using Emerging Technologies in Web Systems and Parallel Programming', *American Geophysical Union (AGU) Fall Meeting*, December 9-13, 2013, San Francisco, CA, USA.
- [535] **Demir, I.**, 'Interactive Web-based Floodplain Simulation System for Realistic Experiments of Flooding and Flood Damage', *American Geophysical Union (AGU) Fall Meeting*, December 9-13, 2013, San Francisco, CA, USA.
- [536] **Demir, I.**, Krajewski, W., 'Interactive Visualization of Large-Scale Hydrological Data using Graphical Processing Unit and Latest Web Technologies', *CUAHSI Conference on Hydroinformatics and Modeling*, July 17-19, 2013, Logan, UT, USA.
- [537] Sonmez, O., Dogan, E., **Demir, I.**, 'Investigation of Flood Risk of The Lower Evros River', *The 15th Annual James F. Jakobsen Graduate Conference*, April 6, 2013, Iowa City, IA, USA.
- [538] Sonmez, O., Dogan, E., Ceribasi, G., **Demir, I.**, 'Investigation of Flood Risk Assessment in Lower Sakarya River, Turkey', *Research Open House*, April 4-5, 2013, Iowa City, IA, USA.
- [539] **Demir, I.**, Krajewski, W., 'Flood Risk Management in Iowa through an Integrated Flood Information System', *European Geosciences Union (EGU) General Assembly*, April 7-12, 2013, Vienna, Austria.
- [540] Krajewski, W., Seo, B., Goska, R., **Demir, I.**, Elsaadani, M., 'Precipitation Datasets for the GPM Iowa Flood Studies (IFloodS) Field Experiment', *European Geosciences Union (EGU) General Assembly*, April 7-12, 2013, Vienna, Austria.
- [541] **Demir, I.**, 'Novel Web-based Interfaces for Interactive Visualization of Large-Scale Hydrological and Meteorological Data', *Iowa Water Conference*, March 4-5, 2013, Ames, IA, USA.
- [542] Sonmez, O., Goska, R., Lee, K., **Demir, I.**, Krajewski, W.F., 'Discharge Estimations for Iowa Flood Center Stage Sensors', *Iowa Water Conference*, March 4-5, 2013, Ames, IA, USA.
- [543] Yolanda, G., Deelman, E., **Demir, I.**, Duffy, C., Marru, S., Pierce, M., Wiener, G., 'Designing a Roadmap for Workflow Cyberinfrastructure in the Geosciences: From Big Data to the Long Tail', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [544] Sonmez, O., Dogan, E., **Demir, I.**, 'Creating Flood Inundation Maps Using 1D Hydrologic Model and GIS for Lower Meric River Basin, Turkey', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [545] Krajewski, W.F., Kruger, A., Niemeier, J.J., Mantilla, R., Ceynar, D.L., Goska, R., **Demir, I.**, Fahim

- Rezaei, H., Gaynor, K.T., 'The Iowa Flood Center's River Stage Sensor Network—Overview', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [546] **Demir, I.**, Krajewski, W., 'Future of Hydroinformatics: Towards Open, Integrated and Interactive Online Platforms', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [547] **Demir, I.**, Krajewski, W., 'Novel Scientific Visualization Interfaces for Interactive Information Visualization and Sharing', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [548] **Demir, I.**, Krajewski, W., 'Information Communication using Knowledge Engine on Flood Issues', *Tenth International Conference on Hydroscience & Engineering (ICHE)*, November 4-7, 2012, Orlando, FL, USA.
- [549] Krajewski, W., Weber, L. J., **Demir, I.**, Mantilla, R., Young, N., Goska, R., Ceynar, D., Seo, B-C., Small, S., Kruger, A., Niemeier, J., Langel, C., 'Leveraging Federal and State Funding to Advance Flood Research and Benefit Local Public: Iowa Flood Information System', *CUAHSI 3rd Biennial Colloquium on Hydrologic Science and Engineering*, July 14-19, 2012, Boulder, CO, USA.
- [550] **Demir, I.**, Krajewski, W., 'A Novel Information Sharing Tool: IFIS Knowledge Engine', *CUAHSI 3rd Biennial Colloquium on Hydrologic Science and Engineering*, July 14-19, 2012, Boulder, CO, USA.
- [551] Krajewski, W., Weber, L., **Demir, I.**, 'Leveraging NSF Investments for Local Benefits', *American Geophysical Union (AGU) Science Policy Conference*, April 30 - May 3, 2012, Washington, DC, USA.
- [552] **Demir, I.**, Krajewski, W., 'Information Communication using Knowledge Engine on Flood Issues', *European Geosciences Union (EGU) General Assembly*, April 22-27, 2012, Vienna, Austria.
- [553] **Demir, I.**, Krajewski, W., 'A Web-based Data Intensive Visualization of Real-time River Drainage Network Response to Rainfall', *European Geosciences Union (EGU) General Assembly*, April 22-27, 2012, Vienna, Austria.
- [554] **Demir, I.**, Krajewski, W., Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System: Towards Integrated Data Management, Analysis and Visualization', *European Geosciences Union (EGU) General Assembly*, April 22-27, 2012, Vienna, Austria.
- [555] **Demir, I.**, Krajewski, W., Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System', *Second National Flood Workshop*, February 27 - March 1, 2012, Houston, TX, USA.
- [556] **Demir, I.**, Krajewski, W., 'A Prototype Visualization of Real-time River Drainage Network Response to Rainfall', *American Geophysical Union (AGU) Fall Meeting*, December 5-9, 2011, San Francisco, CA, USA.
- [557] **Demir, I.**, Krajewski, W., Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System', *American Geophysical Union (AGU) Fall Meeting*, December 5-9, 2011, San Francisco, CA, USA.
- [558] Young, N., Krajewski, W., Weber, L., Mantilla, R., **Demir, I.**, Goska, R., 'The Iowa Flood Center', *Minnesota Association of Floodplain Managers (MnAFPM) Conference*, November 16-18, 2011,

Mankato, MN, USA.

- [559] Krajewski, W., **Demir, I.**, Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System (IFIS)', *The Geological Society of America (GSA) Annual Meeting*, October 9-12, 2011, Minneapolis, MN, USA.
- [560] Krajewski, W., **Demir, I.**, Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System (IFIS)', *CUAHSI Conference on Hydrologic Data and Information Systems*, June 22-24, 2011, Utah State University, Logan, UT, USA.
- [561] Beck, M. B., **Demir, I.**, 'Models, Informatics, & The Growth of Knowledge', *7th International Conference on Ecological Informatics (ISEI7)*, December 13-16, 2010, Ghent, Belgium.
- [562] **Demir, I.**, Beck, M. B., 'Cities as Forces for Good in the Environment: Scientific Visualization and Stakeholder Dialogue', *2nd Annual Scientific Research Day*, Graduate Students and Postdocs in Science (GSPS), June 18, 2010, University of Georgia, Athens, GA, USA.
- [563] **Demir, I.**, Parker, A. K., Beck, M. B., 'Cities as Forces for Good in the Environment: Scientific Visualization and Stakeholder Dialogue', *2010 AWRA Spring Specialty Conference: Geographic Information Systems (GIS) and Water Resources VI*, March 29-31, 2010, Orlando, FL, USA.
- [564] **Demir, I.**, Beck, M. B., 'Cities as Forces for Good in the Environment: The Role of Environmental Information Systems', *10th Annual Graduate Interdisciplinary Conference*, March 27, 2010, University of Georgia, Athens, GA, USA.
- [565] **Demir, I.**, Beck, M. B., 'Scientific Visualization and Stakeholder Dialogue', *2010 Warnell Graduate Student Research Symposium*, University of Georgia, March 4-5, 2010, Athens, GA, USA.
- [566] **Demir, I.**, Beck, M. B., 'Dynamic Spatial Information Interface for USGS Monitoring Sites', *Southern Forestry & Natural Resource Management GIS Conference*, December 7-9, 2009, Athens, GA, USA.
- [567] **Demir, I.**, Beck, M. B., 'GWIS: Georgia Watershed Information System', *Interdisciplinary Scientific Research Day*, July 1, 2009, University of Georgia, Athens, GA, USA.
- [568] **Demir, I.**, Beck, M. B., 'An Information Management System for Georgia Watersheds', *11th Annual Warnell School of Forestry and Natural Resources Graduate Student Symposium*, University of Georgia, February 26-27, 2009, Athens, GA, USA.
- [569] Walker, R. V., Shi, F., **Demir, I.**, Beck, M. B., 'High-frequency Monitoring and Modeling of Weracoba Creek Dynamic Behavior', *Weracoba Creek Water Quality Improvement Workshops*, July 25-26, 2008, Columbus State University, GA, USA.
- [570] **Demir, I.**, Beck, M. B., 'Data-processing in Management of Water Quality: Self Organizing Maps as a Multivariate Prediction Method', *10th Annual Warnell School of Forestry and Natural Resources Graduate Student Symposium*, University of Georgia, February 28-29, 2008, Athens, GA, USA.
- [571] Walker, R.V., Shi, F., **Demir, I.**, Beck, M. B., 'Hydrologic and Nutrient Behavior of a Small Basin in the Upper Chattahoochee Watershed using Near Real-time Monitoring', *Carl E. Kindsvater Symposium*, February 5, 2007, Atlanta, GA, USA.

- [572] Sunlu, F., **Demir, I.**, Onkal-Engin, G., Sunlu, U., Buyukisik, B., Koray, T., Sever, T., Kukrer, S., and Aydin, A., 'Prediction of Nano-plankton Change in Izmir Bay (Aegean Sea - TURKEY) with Time by Neural Networks', Rapp. Comm. Int. Mer. Médit., 38, *38th CIESM Congress*, 9-13 April 2007, Istanbul, TURKEY.
- [573] **Demir, I.**, Beck, M. B., 'Determining the relationship between TON and NO₂ by using Artificial Neural Networks', *9th Annual Warnell School of Forestry and Natural Resources Graduate Student Symposium*, University of Georgia, 23-24 February 2006, Athens, GA, USA.

Invited Talks

- [574] **Demir, I.**, **Keynote Speech**, 'Reimagining Hydrology Education, Research and Engineering Practice in the Age of AI', 16th International Conference on Hydroinformatics, June 22-26, 2026, Zaragoza, Spain.
- [575] **Demir, I.**, 'The Nexus of Hydroinformatics and Agentic AI: Reimagining the Future of Disaster Resilience', AECOM Guest Speaker, Dec 8, 2025, Online.
- [576] **Demir, I.**, 'Shaping the Future of AI Education', NSF LEVEL UP AI Workshop by CRA, Dec 4-5, 2025, Atlanta, GA.
- [577] **Demir, I.**, 'The Nexus of Hydroinformatics and Agentic AI: Reimagining the Future of Disaster Resilience', Department of Earth & Environmental Sciences, Tulane University, Nov 7, 2025, New Orleans, LA.
- [578] **Demir, I.**, 'Reimagining Flood Risk Management in the Age of AI: AI-Augmented Flood Education, Communication and Decision Support', ASFPM AI Subcommittee Webinar, Association of State Floodplain Managers, Oct 30, 2025, Online.
- [579] **Demir, I.**, 'Reimagining Learning, Innovation and Engineering Practice in the Age of AI', AI Lunch and Learn, Center for Community-Engaged Artificial Intelligence, Tulane University, Oct 20, 2025, New Orleans, LA.
- [580] **Demir, I.**, 'Agentic AI and Immersive Digital Twins for Disaster Risk Management', IMRR UNESCO Chair & SIMR Webinar Series, Oct 8, 2025, Online.
- [581] **Demir, I.**, 'Reimagining Learning, Innovation and Engineering Practice in the Age of AI', Department of Geography and Anthropology, Louisiana State University, Sep 26, 2025, Baton Rouge, LA.
- [582] **Demir, I.**, 'Tulane Leading Through Change: Reimagining Learning, Innovation and Engineering in the Age of AI', Tulane Board, Tulane University, Sep 18, 2025, New Orleans, LA.
- [583] Samadi, V., Panthi, K., **Demir, I.**, Castronova, A., Adhikari, B., Boyer, D.M., 'WaterSoftHack: Machine Learning and Cyberinfrastructure Cybertraining for Water Science and Engineering', NSF Cybertraining Program PI Meeting, July 27-29, 2025, Denver, CO.
- [584] **Demir, I.**, Sermet, Y., 'Crowdsourced Approaches for Stage Measurements at Ungauged Locations Using Smartphones', IIHR / Iowa Flood Center, University of Iowa, May 12, 2025, Iowa City, IA.

- [585] **Demir, I.**, 'Enhancing Disaster Preparedness via AI-Assisted Digital Twins', Brazilian Delegation, ByWater Institute, Apr 15, 2025, New Orleans, LA.
- [586] **Demir, I.**, 'From Data to Action: AI and Hydroinformatics Applications in Environmental Science', The International Environmetrics Society (TIES), Apr 4, 2025, Online.
- [587] **Demir, I.**, 'Panel: Priming the Pump: Understanding Big Data and AI', The 7th Gilbert F. White National Flood Policy Forum, Mar 5-6, 2025, Washington, D.C.
- [588] **Demir, I.**, 'AI-Assisted Digital Twins for Disaster Resilience in Louisiana', State of Louisiana Office of Resilience, Feb 28, 2025, Baton Rouge, LA.
- [589] **Demir, I.**, 'From Data to Action: AI and Hydroinformatics Applications in Environmental Science', River Coastal Science and Engineering, Tulane University, Feb 20, 2025, New Orleans, LA.
- [590] **Demir, I.**, 'Hydroinformatics at UIOWA: Celebrating Success and Future Directions', IIHR / Iowa Flood Center, University of Iowa, Jan 15, 2025, Iowa City, IA.
- [591] Sermet, Y., **Demir, I.**, 'ReviewerAI: An AI-powered Automated Peer-Review Service', STM Innovation Fair 2024, Dec 3-4, 2024, London, UK.
- [592] Kim, K., Muste, M., **Demir, I.**, 'Stage-discharge ratings in unsteady flows: corrections, improvements, replacements', Iowa Flood Center, Aug 28, 2024.
- [593] Sermet, Y., **Demir, I.**, 'River Morphology Information System Cyberinfrastructure Overview and Demo', RIMORPHIS 4th Annual Stakeholder Workshop, Purdue University, July 11-12, 2024.
- [594] Erazo, C., Sermet, Y., Shahid, M., **Demir, I.**, 'HydroRTC: A Web-Based Data Transfer and Communication Library for Collaborative Data Processing and Sharing in the Hydrological Domain', Iowa Flood Center, March 27, 2024.
- [595] Li, Z., **Demir, I.**, 'MA-SARNetS: One-Shot SAR Backscatter Nowcast Frameworks with Physical Driving Forces and Out-of-Scope Information', Iowa Flood Center, January 3, 2024.
- [596] **Demir, I.**, 'Hydroinformatics: Harnessing Information Science and Intelligent Systems for Advanced Hydrological Insights', Introduction to Geographic Databases, Course Lecture, September 11, 2023.
- [597] Li, Z., **Demir, I.**, 'Flood Mapping with Multimodal Remote Sensing Imagery: Application and Adjustment', Iowa Flood Center, August 30, 2023.
- [598] **Demir, I.**, 'Scientific Analysis and Communication of Geospatial Data using Artificial Intelligence and Immersive Technologies', CZ Science Frontiers Seminar Series, July 12, 2023.
- [599] **Demir, I.**, 'AI Chatbots: Opportunities and Challenges in Engineering Research, Education and Practice', MDPI Topics Webinar, AI Chatbots: Threat or Opportunity?, June 27, 2023.
- [600] Sermet, Y., **Demir, I.**, 'River Morphology Information System Cyberinfrastructure Overview and Demo', RIMORPHIS 3rd Annual Stakeholder Workshop, University of Colorado, June 22-23, 2023.
- [601] Erazo, C., Sermet, Y., **Demir, I.**, 'HydroCompute: A Web-Based Parallel Computing Framework for Hydrological Analysis', Iowa Flood Center, May 31, 2023.

- [602] Alabbad, Y., Yildirim, E., **Demir, I.**, 'A Web-based Analytical Urban Flood Damage and Loss Estimation Framework', Iowa Flood Center, March 22, 2023.
- [603] Sermet, Y., **Demir, I.**, 'Next-Generation Web Technologies, AI and Intelligent Systems Applications in Geoscience', Iowa Flood Center, February 1, 2023.
- [604] **Demir, I.**, Sermet, Y., Sajja, R., 'AI-Enabled Intelligent Assistant (AIIA) for Personalized and Adaptive Learning and Advising', Support Community for Instructional Technology Meeting, University of Iowa, February 1, 2023.
- [605] **Demir, I.**, 'Next Generation Hydroinformatics Applications in Environmental Science and Water Resources', GIS Day at King's College, NY, November 16, 2022.
- [606] Alabbad, Y., **Demir, I.**, 'Be Ready for Flooding', Three Minute Thesis Competition, College of Engineering, University of Iowa, October 17, 2022.
- [607] Yildirim, E., **Demir, I.**, 'Agricultural Flood Vulnerability Assessment and Risk Quantification in Iowa', Upper Mississippi River Basin Association (UMRBA) Quarterly Meeting, August 9, 2022.
- [608] Yildirim, E., **Demir, I.**, 'Flood Mitigation and Data Analytics Framework: Middle Cedar Case Study', Iowa Flood Center, August 3, 2022.
- [609] Sermet, Y., **Demir, I.**, 'River Morphology Information System Cyberinfrastructure Overview and Demo', Iowa Flood Center, July 20, 2022.
- [610] **Demir, I.**, 'Hydroinformatics Applications in Disaster Management and Communication', DHS Academic Engagement Office of Partnership and Engagement Visit, July 19, 2022.
- [611] Sermet, Y., **Demir, I.**, 'River Morphology Information System Cyberinfrastructure Overview and Demo', RIMORPHIS 2nd Annual Stakeholder Workshop, May 19, 2022.
- [612] **Demir, I.**, 'Next Generation Hydroinformatics Applications in Environmental Science and Water Resources', ASCE Lehigh Valley Section, February 23, 2022.
- [613] Li, Z., **Demir, I.**, 'Evaluation of HAND-based Inundation Predictions from the National Water Center and A Web-based System: A Case Study in Iowa', Iowa Flood Center, February 2, 2022.
- [614] Xiang, Z., **Demir, I.**, 'Fully distributed rainfall-runoff modeling using graph neural network', Iowa Flood Center, January 26, 2022.
- [615] Yildirim, E., **Demir, I.**, 'Flood Risk Assessment and Quantification at the Community and Property Level in the State of Iowa', Iowa Flood Center, December 8, 2021.
- [616] Alabbad, Y., **Demir, I.**, 'Flood Mitigation Data Analytics and Decision Support Framework: Iowa Middle Cedar Watershed Case Study', Iowa Flood Center, December 1, 2021.
- [617] **Demir I.**, 'Next Generation Hydroinformatics Applications for Disaster Analytics and Communication', *Australian Water School*, December 1, 2021, Online.
- [618] **Demir I.**, 'AI and Intelligent Systems Applications in Geoscience', *Department of Geographical and Sustainability Sciences*, November 19, 2021, University of Iowa.
- [619] Ewing, G., **Demir, I.**, 'WebHLM: A Client-Side Web Environment for Hydrologic Modeling and

Education', Iowa Flood Center, August 18, 2021.

- [620] Xiang, Z., **Demir, I.**, 'Regional Streamflow Modeling Using Deep Learning', Iowa Flood Center, August 4, 2021.
- [621] Erazo, C., Sermet, Y., Molkenhuth, F., **Demir, I.**, 'HydroLang: An Open-Source Web-Based Programming Framework for Hydrological Sciences', Iowa Flood Center, July 14, 2021.
- [622] Sermet, Y., **Demir, I.**, 'River Morphology Information System Cyberinfrastructure Overview and Demo', RIMORPHIS 1st Annual Stakeholder Workshop, May 12 & 19, 2021.
- [623] Jones, C., et al., **Demir, I.**, 'Upper Mississippi Information System', Water Data Forum, Cleveland Water Alliance, April 20, 2021, Virtual.
- [624] **Demir, I.**, 'Panel: AI in High-Stakes Situations: AI Systems for Flood Communication and Analytics', ISI AI Futures Symposium, January 12-13, 2021, Virtual.
- [625] Yildirim, E., **Demir, I.**, 'Flood Mitigation and Data Analytics Framework: Middle Cedar Case Study', Iowa Flood Center, December 16, 2020.
- [626] Sermet, Y., **Demir, I.**, 'GeospatialVR: A Web-based Virtual Reality Framework for Collaborative Environmental Simulations', Iowa Flood Center, December 16, 2020.
- [627] Alabbad, Y., **Demir, I.**, 'Wayfinding and accessibility analysis for critical amenities in Iowa during flood events', Iowa Flood Center, July 22, 2020.
- [628] Xiang, Z., **Demir, I.**, 'Long-term forecasting of streamflow with deep learning models', Iowa Flood Center, July 15, 2020.
- [629] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', Cloud2Street, July 10, 2020.
- [630] Ewing, G., **Demir, I.**, 'An Ethical Decision-Making Framework: Smart Water Case Study on Flooding', Iowa Flood Center, July 1, 2020.
- [631] Li, Z., **Demir, I.**, 'HAND Model Evaluation Study and Real-Time Flood Mapping System', Iowa Flood Center, June 24, 2020.
- [632] **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-side Web Systems', IS-GEO Meeting, April 7, 2020.
- [633] Liang, X., et al., **Demir, I.**, 'Collaborative Research: CyberWater—An Open and Sustainable Framework for Diverse Data and Model Integration with Provenance and Access to HPC', NSF CSSI PI Meeting, February 13-14th, 2020, Seattle, WA.
- [634] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', IBM Precision Agriculture Workshop, January 7, 2020, Iowa City, IA.
- [635] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', NSF Convergence Accelerator-Open Knowledge Network EarthCube Workshop, January 6, 2020, Bethesda, MD.
- [636] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', Emerging Issues in Big Data, Environmental Health, and Geospatial Science Workshop, December 6, 2019,

University of Iowa, Iowa City, IA.

- [637] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', NSF Convergence Accelerator Planning Symposium, December 3-4, 2019, Univ. of South Carolina, Columbia, SC.
- [638] **Demir, I.**, 'Next Generation Data Analytics and Communication Systems for Flooding', 2019 MATC Flood Research Workshop, November 25, 2019, University of Nebraska, Lincoln, NE.
- [639] **Demir, I.**, Campbell, A., 'Transportation Planning for Floods', 2019 MATC Flood Research Workshop, November 25, 2019, University of Nebraska, Lincoln, NE.
- [640] **Demir, I.**, 'Iowa Flood Information System (IFIS) Vision and Demo', 2019 MATC Flood Research Workshop, November 25, 2019, University of Nebraska, Lincoln, NE.
- [641] **Demir, I.**, 'Intelligent Systems and Data Analytics for Disaster Risk Communication', November 22, 2019, Purdue University, Online.
- [642] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', GIS Day 2019, November 13, 2019, University of Kansas, Lawrence, KS.
- [643] **Demir, I.**, Bruner, R., 'Water Quality Information Systems and Data Exchange Network', R7/R8 EPA Exchange Network Workshop, October 1, 2019, Online.
- [644] **Demir, I.**, Langel, R., Sit, M.A., 'The Iowa Well Forecasting System (IWfOS)', Iowa Flood Center, August 21, 2019, Iowa City, IA.
- [645] **Demir, I.**, Hu, A., Li, Z., Manazir, A., 'Interactive and Real-time Flood Inundation Mapping on Client-Side Web Systems', Iowa Flood Center, August 8, 2019, Iowa City, IA
- [646] **Demir I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', *Canada Centre for Mapping and Earth Observation, Natural Resources Canada*, June 20, 2019, Online.
- [647] **Demir I.**, 'Communication of Extreme Events using Intelligent Systems and Visualization', *Department of Geographical and Sustainability Sciences*, April 19, 2019, Iowa City, IA, USA.
- [648] **Demir I.**, 'Intelligent Data Analytics and Visualization Systems for Transportation', *Iowa DOT Meeting, UIOWA*, November 9, 2018, Iowa City, IA, USA.
- [649] **Demir, I.**, 'Cyberinfrastructure Systems for Visualization and Communication of Scientific Data', Guest Lecture, Department of Landscape Architecture, College of Design, ISU, August 25, 2017, Iowa City, IA, USA.
- [650] **Demir, I.**, 'Flood Damage and Loss Estimation on Web-based Systems', Guest Lecture, HAZUS User Call, August 8, 2017, Webinar.
- [651] **Demir, I.**, 'Cyberinfrastructure Systems for Big Data Management, Analysis, and Visualization', Guest Lecture, Computer Science, UIOWA, April 28, 2017, Iowa City, IA, USA.
- [652] **Demir, I.**, Machine Learning: Farm-to-Table Workshop, April 18-19, 2017, University of Illinois in Urbana-Champaign, Urbana, IL, USA.
- [653] **Demir, I.**, 'Cyberinfrastructure Systems for Big Data Management, Analysis, and Visualization', Guest Lecture, Geographical and Sustainability Sciences, UIOWA, April 10, 2017, Iowa City, IA,

USA.

- [654] **Demir, I.**, ‘Novel Systems Big Data Analytics and Scientific Visualization’, Guest Lecture, Explore Engineering@Iowa, University of Iowa, April 8, 2017, Iowa City, IA, USA.
- [655] **Demir, I.**, ‘Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence’, Guest Lecture, IS-GEO Working Group, April 4, 2017, Iowa City, IA, USA.
- [656] **Demir, I.**, ‘Cyberinfrastructure Systems for Big Data Management, Analysis, and Visualization’, Webinar, HDR Engineering, February 7, 2017, Iowa City, IA, USA.
- [657] **Demir, I.**, ‘Cyberinfrastructure Systems for Big Data Management, Analysis, and Visualization’, Guest Lecture, Human Dimensions of Big Data, University of Iowa, November 2, 2016, Iowa City, IA, USA.
- [658] **Demir, I.**, ‘Iowa Flood Center Data Resources and Iowa Flood Information System’, National Water Center Summer Institute, June 13, 2016, Tuscaloosa, AL, USA.
- [659] **Demir, I.**, ‘Next Generation Cyberinfrastructure Systems for Big Data Management, Analysis, and Visualization’, Midwest Big Data Hub - Digital Agriculture Spoke All-Hands Meeting, May 16-17, 2016, Iowa State University, Ames, IA, USA.
- [660] **Demir, I.**, ‘NSF Career Workshop’, Training, UIOWA, OVPR, March 24, 2016.
- [661] **Demir, I.**, ‘Next Generation Hydroinformatics Systems for Big Data Management, Analysis, and Visualization’, Lightning Talk, NSF Midwest Big Data Hub All-Hands Meeting, March 21, 2016.
- [662] **Demir, I.**, ‘Next Generation Hydroinformatics Systems for Big Data Management, Analysis, and Visualization’, Invited Talk, XSEDE Science Gateway Community Webinar, February 26, 2016.
- [663] **Demir, I.**, ‘Scientific Visualization and Information Communication in Hydrological Sciences’, Guest Lecture, IIHR, University of Iowa, February 4, 2016, Iowa City, IA, USA.
- [664] **Demir, I.**, ‘Applications and Services 2021: Disaster Preparedness and Response’, NSF Workshop on Applications and Services in the Year 2021, January 27-28, 2016, Washington, DC, USA
- [665] **Demir, I.**, ‘Game-based and Interactive Learning Environments’, Tenth Annual Sonia Kovalevsky High School Mathematics Day, April 11, 2015, Iowa City, IA, USA
- [666] **Demir, I.**, Krajewski, W., ‘Towards an Integrated Flood Preparedness and Response: Centralized Data Access, Analysis, and Visualization’, *UI GIS Users Meeting*, February 3, 2015, Iowa City, IA, USA
- [667] **Demir, I.**, ‘Interactive Visualization of Scientific Data using Web Technologies’, PDE Seminar, Mathematics Department, University of Iowa, December 3, 2014, Iowa City, IA, USA
- [668] **Demir, I.**, Invitation to the **White House** Innovation for Disaster Response and Recovery Demo Day, July 29, 2014, Washington, DC, USA
- [669] **Demir, I.**, Collaboration Visit at NASA Scientific Visualization Studio at NASA Goddard Space Flight Center, June 2-6, 2014, Greenbelt, MD, USA

- [670] **Demir, I.**, 'Trends and Challenges on Future of Emergency Preparedness and Early Warning Systems', Workshop on Grand Challenges in Engineering and Applied Sciences, May 24-26, 2014, Newark, NJ, USA
- [671] **Demir, I.**, Krajewski, W., 'Future of Emergency Preparedness: Towards Open, Integrated and Interactive Online Platforms', The International Conference on Hot Topics in Engineering and Applied Sciences – Mini Symposium and Planning Meeting (HotEng 2014), September 28-29, 2013, Buffalo, NY, USA
- [672] **Demir, I.**, Krajewski, W., 'Novel Scientific Visualization Interfaces for Interactive Data Visualization and Analytics', The International Conference on Hot Topics in Engineering and Applied Sciences – Mini Symposium and Planning Meeting (HotEng 2014), September 28-29, 2013, Buffalo, NY, USA
- [673] **Demir, I.**, 'FloodCube: National Flood Information System', US Ignite – Gigabit Explorer Challenge, November 1-3, 2013, Kansas City, MO, USA.
- [674] **Demir, I.**, Mentor Summit, Google Summer of Code 2013, October 19-20, 2013, Mountain View, CA, USA.
- [675] **Demir, I.**, 17th GENI (The Global Environment for Network Innovations) Engineering Conference (GEC17), July 21-23, 2013, Madison, WI, USA.
- [676] **Demir, I.**, 'Flood Cube – National Flood Information Platform', US Ignite – Next Generation Application Summit, June 24-26, 2013, Chicago, IL, USA.
- [677] **Demir, I.**, 'Science 2.0 – In the Light of Environmental Information Systems and Scientific Visualization', Department of Civil Engineering, Zirve University, June 18, 2013, Gaziantep, TURKEY.
- [678] **Demir, I.**, 'Information Systems for Resource Management', Course Lecture, Civil and Environmental Engineering, University of Iowa, May 29, 2013, Iowa City, IA, USA.
- [679] **Demir, I.**, 'Iowa Flood Information System (IFIS): Towards Integrated Data Management, Analysis and Visualization', GIS Day 2013, University of Iowa, April 25, 2013, Iowa City, IA, USA.
- [680] **Demir, I.**, 'Future of Scientific Visualization and Online Mapping', GIS Day 2013, University of Iowa, April 25, 2013, Iowa City, IA, USA.
- [681] **Demir, I.**, 'EarthCube Charette: Building the Cyberinfrastructure to Better Understand Our Complex and Changing Planet', June 12-14, 2012, Arlington, VA, USA.
- [682] **Demir, I.**, 'EarthCube Community Workshop: Designing A Roadmap for Workflows in Geosciences', One-day Workshops, March 13 / April 13 / May 16 / Jun 5, 2012.
- [683] **Demir, I.**, 'Iowa Flood Information System', Hawkeye Caucus Day, Iowa State Capitol, March 27, 2012, Des Moines, IA, USA.
- [684] **Demir, I.**, 'Iowa Flood Information System', Iowa Water Conference, Iowa State University, March 6-7, 2012, Ames, IA, USA.
- [685] **Demir, I.**, 'Science 2.0 – In the Light of Environmental Informatics and Information Visualization', Department of Mechanical and Industrial Engineering, University of Iowa, January 26, 2012, Iowa

City, IA, USA.

- [686] **Demir, I.**, 'Science 2.0 – In the Light of Data Informatics and Scientific Visualization', Iowa Flood Center, IIHR – Hydraulics Engineering, University of Iowa, November 3, 2011, Iowa City, IA, USA.
 - [687] **Demir, I.**, 'Environmental Information Systems (GWIS and IFIS) and Scientific Visualization', Turkish American Academics of Midwest (TAAM), May 21, 2011, Chicago IL, USA.
 - [688] **Demir, I.**, 'Environmental Information Systems (GWIS, GWP and IFIS) and Scientific Visualization', Gebze Institute of Technology, April 28, 2011, Kocaeli, TURKEY.
 - [689] **Demir, I.**, 'Environmental Information Systems and Scientific Visualization', Iowa Flood Center, IIHR – Hydraulics Engineering, University of Iowa, December 14, 2010, Iowa City, IA, USA.
 - [690] **Demir, I.**, 'Scientific Visualization and Stakeholder Dialogue', *Workshop on Cities as Forces for Good in the Environment*, Warnell School of Forestry and Natural Resources, University of Georgia, November 18, 2009, Athens, GA, USA.
 - [691] **Demir, I.**, 'Semantic Web and Environmental Information Systems', *Department of Geography*, University of Georgia, October 28, 2009, Athens, GA, USA.
 - [692] **Demir, I.**, 'Popular Scientific Publishing', *Second Annual Workshop for Young Scholars*, Southern Polytechnic State University, August 16, 2009, Atlanta, Georgia, USA.
 - [693] **Demir, I.**, 'GWIS: Georgia Watershed Information System', *Second Annual Workshop for Young Scholars*, Southern Polytechnic State University, August 16, 2009, Atlanta, GA, USA.
 - [694] **Demir, I.**, 'GWIS: Georgia Watershed Information System', Athens EPA Meeting, *Warnell School of Forestry and Natural Resources*, June 3, 2009, University of Georgia, Athens, GA, USA.
 - [695] **Demir, I.**, 'GWIS: Georgia Watershed Information System', Center for Research in Water Resources', University of Texas at Austin, May 8, 2009, Austin, TX, USA.
 - [696] **Demir, I.**, 'GWIS: Georgia Watershed Information System', *Utah Water Research Laboratory*, Utah State University, May 6, 2009, Logan, Utah, USA.
 - [697] **Demir, I.**, 'GWIS: Georgia Watershed Information System', *River Basin Center 2nd Friday Symposium*, University of Georgia, April 10, 2009, Athens, GA, USA.
 - [698] **Demir, I.**, 'Assessment of urban air quality using fuzzy synthetic evaluation', April 2005, *Warnell School of Forestry and Natural Resources*, University of Georgia, Athens, GA, USA.
 - [699] **Demir, I.**, 'Determination of the relationship between sewage odour and BOD by neural networks', April 2005, *Warnell School of Forestry and Natural Resources*, University of Georgia, Athens, GA, USA.
 - [700] **Demir, I.**, 'Neural Network and Fuzzy Logic Applications in Environmental Science', 2004, *Gebze Institute of Technology*, Kocaeli, TURKEY.
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CREATIVE ENVIRONMENTAL AND INFORMATION SCIENCE WORKS

Information Systems and Web Platforms

- 2023-present *Iowa On-Road Structures Information Platform*
The project evaluates the flood reduction benefits of existing on-road structures and conducts estimation of the flood storage available through new ORS in Iowa
- 2022-present *Academic AI Hub*
Educational tools and services based on conversational AI systems and Large Language Models to support academic needs and operations
- 2021-present *Blue Green Action Platform (BlueGAP)*
A community centric cyberinfrastructure for enhanced water quality monitoring using web and conversational AI systems
- 2020-present *River Morphology Information System (RIMORPHIS)*
A web-based cyberinfrastructure for advancing river morphology research, analysis and communication in the big data era
- 2019-present *Real-time Flood Mapping System using HAND*
A web-platform to generate flood inundation maps on the client-side using HAND (Height Above Nearest Drainage)
- 2019-present *Iowa Well Forecasting System (IWFoS)*
A web-platform to access information on well geology and water quality information in Iowa
- 2018-present *Upper Mississippi Information System (UMIS)*
An integrated big data framework for water quality issues in the Upper Mississippi River Basin
- 2016-present *South Dakota Flood Information System (SDFIS)*
Design, development, implementation and maintenance of a web-based information system on flood related data, information and visualizations for South Dakota
- 2016-present *Iowa Watershed Approach Information System (IWAIS)*
A web-based cyberinfrastructure for Iowa Watershed Approach project for resilience with novel data integration, visualizations and analysis capabilities
- 2015-present *Iowa Water Information System (IWIS)*
A generalized cyberinfrastructure for developing custom web-based information systems with novel data integration, visualizations and analysis capabilities
- 2015-2018 *Social Media Analytics Platform*
A web-based cyberinfrastructure system for acquisition, processing and analyzing social media data streams using natural language processing, ontology and soft computing
- 2015-2017 *NASA SMAP Information System*
Planning, design and implementation of a web-based information system on data, information and visualizations of NASA SMAP satellite mission experiment

- 2014-present *Iowa Water Quality Information System (IWQIS)*
A web-based information system for real-time access to state wide water quality sensors with novel visualizations and analysis capabilities
- 2013-2015 *National Flood Information System*
A web-based information system for real-time access to nationwide stream sensors for flood warnings and water levels on Google Cloud and App Engine
- 2013-2016 *Hydrological Educational Simulation System with Virtual and Augmented Reality*
A web-based virtual and augmented reality application for simulation of hydrological system using desktop markers and camera via WebRTC and WebGL technologies
- 2013-2014 *Turkey Flood Information System (TABIS)*
Planning, design and implementation of a web-based information system on flood related data, information and visualizations
- 2013-2015 *NASA IFLOODS Information System*
Planning, design and implementation of a web-based information system on data, information and visualizations of NASA GPM satellite mission experiment
- 2012-2013 *UCF CHAMPS Hydrologic Information System*
Planning, design and implementation of a web-based information system on coastal inundation and modeling data, information and visualizations
- 2012-2013 *Field Campaign Management System - NASA IFLOODS Project*
A web-based interface for positioning radars and rainfall instruments with adjustable range and location, watersheds, and rich spatial layers on a map interface
- 2012-2013 *Fund-A-Sensor Initiative*
A crowd-funding initiative for getting support to develop and deploy new stream sensors for improving flood monitoring in Iowa
- 2011-2016 *IFIS Knowledge Engine & Smart Assistant*
Intelligent knowledge generation system supported with ontology, relational database queries, real-time data, hydrological models, and scientific visualizations
- 2010-present *Iowa Flood Information System – IFIS*
Design, development, implementation and maintenance of a web-based information system on flood related data, information and visualizations for Iowa
- 2009-2012 *Global Water Platform – GWP*
Planning, design and implementation of a web-based platform on water
- 2007-2010 *Georgia Watershed Information System – GWIS*
A prototype of an information system for Georgia watersheds
- 2006-2011 *Scientific Collaboration and Research Platform*
Academic Research Group & Project Management System
- 2000 *B2B (Business to Business) Web Portal*

	Real time product exchange, stock, and product supply/demand management
1999	<i>Domain name and extension system in foreign languages</i> Access web sites with international character set and new domain name extensions

Engineering Projects and Software

2004	<i>Noise Pollution Modeling Toolbox</i> , Pendik Municipality, Istanbul, TURKEY Standalone application for modeling and visualization of noise distribution and maps <i>Company</i> : TAGEM Technology, Istanbul, TURKEY
2003	<i>Izmit Bay Technological Forecast Project</i> , Environmental Group, Kocaeli Industry, Istanbul, TURKEY, Mathematical and Computational Modeling Responsibility <i>Sponsor</i> : Kocaeli Industry Association, Kocaeli, TURKEY
2002-2004	<i>Environmental Impact Assessment Projects</i> Procter & Gamble and 7 other companies from various industries, TURKEY
2002	<i>Wastewater Treatment Plant Design</i> , Aydın, TURKEY Gebze Institute of Technology, Kocaeli, TURKEY

Web-based Tools and Mobile Applications

2016	<i>Live Water Effect</i> : A real-time water movement visualizer for flood inundation maps, streamflow forecasts, rainfall and water quality data using IFIS infrastructure
2015	<i>Tweetbot</i> : An automated Twitter application for posting tweets on flood warnings in Iowa using IFIS infrastructure
2015	<i>Watershed Delineator</i> : A web-based watershed delineator using GPU and server-side Python for high resolution DEM data sets
2015	<i>Map-based Image Parser</i> : A Python application to collect and parse web-based map service imagery for offline use
2015	<i>Davenport Pilot Project</i> : A web-based system for Davenport watershed studies based on IFIS infrastructure
2015	<i>MRMS and IFIS Rainfall Comparison Tool</i> : A web-based interface for comparing rainfall products from various sources
2015	<i>Iowa Flood Risk Management System</i> : A web-based interface for sharing and visualizing flood risk maps for Iowa, supported by Iowa DNR
2015	<i>Iowa Draft Flood Hazard Mapping System</i> : A web-based interface for sharing and visualizing draft flood hazard maps for Iowa, supported by Iowa DNR
2015	<i>Iowa Rating Curve Pilot Project</i> : A web-based interface for sharing and visualizing cross section and rating curve data for selected sites in Iowa, supported by U.S. Army Corps of Engineers
2015	<i>NPOL Radar Data Visualization Interface</i> : A custom web-based interface for visualizing NPOL radar data in real-time – NASA IFLOODS Project

- 2015 *Make It Rain!:* A web-based map application developed for ESRI Data Viz App Challenge to simulate water drainage with thousands of particles in a smooth animation for Iowa.
- 2015 *Turkey River Information System:* A web-based information system with streamflow forecast and model results for Turkey River in Iowa.
- 2015 *NASA SMAP Planning Tool:* A web-based field experiment planning system for NASA SMAP mission validation in Arizona.
- 2015 *Smart Image Overlay Tool:* A Google Maps API based image overlay tool with distortion and scaling capabilities
- 2015 *Rainfall Drainage Tool:* A WebGL based drainage visualization system for real-time rainfall products in Iowa Flood Information System
- 2015 *Sensor Explorer:* A data analysis tool for stream sensor smart filtering and selection.
- 2014 *Indian Creek IS:* A web-based flood preparedness for Indian Creek watershed in Iowa.
- 2014 *3D City Visualizer:* A web-based interface for generating 3D visualization of buildings in any location in Iowa coupled with streams, roads, and data layers.
- 2014 *Video Stream Interface:* A web-based interface for recording and sharing flood related videos with IFIS utilizing WebRTC.
- 2014 *Iowa Flood Visualizer:* A web-based interface for generating interactive and realistic simulation of flooding at any location in Iowa.
- 2014 *Ramsey [5,5] Solver Game:* An online interactive Ramsey number solver game to improve bounds of $R(5,5)$.
- 2014 *Rainfall Drainage Simulator:* A web-based interface for simulating [up to 100K grids cells] rainfall drainage in Iowa for a selected region.
- 2014 *Real-time Idaho Rainfall Interface:* A web-based interface for 6-hour animation of real-time rainfall intensity maps for Idaho.
- 2014 *Real-time Terrain Viewer:* A web-based interface for generating 3D terrain using lidar and hillshade imagery for any location in Iowa
- 2014 *Real-time Watershed Delineator:* A web-based interface for generating watershed for any location in Iowa
- 2014 *XPOL Radar Data Visualization Interface:* A custom web-based interface for visualizing XPOL radar data in real-time – NASA IFLOODS Project
- 2013 *IFIS app on Firefox OS and Windows 8:* IFIS is ported to work with new Firefox mobile OS and Windows 8 devices.
- 2013 *Real-time South Carolina Rainfall Interface:* A web-based interface for 6-hour animation of real-time rainfall intensity maps for South Carolina.
- 2013 *Flood Warning Widget:* A web-based widget for reporting flood warnings in Iowa on blogs and

third party websites using IFIS.

- 2013 *Disdrometer Visualization Interface*: A web-based interface for visualizing drop size and velocity of rain drops using disdrometer data in real-time – NASA IFLOODS Project
- 2013 *Rain-Gauge / Soil Moisture Visualization Interface*: A web-based interface for visualizing rain and soil moisture gauge data in real-time – NASA IFLOODS Project
- 2012 *Rainfall Data Visualizer*: A web-based interface for browsing historical rainfall data with zoom, and advanced visualization capabilities – NASA IFLOODS Project
- 2012 *Radar Data Browser*: A web-based interface for browsing historical radar data with zoom, vertical and horizontal visualization capabilities – NASA IFLOODS Project
- 2012 *Augmented Reality Application for iOS*: Web services to overlay real-time stream sensor data and Iowa CAFOs locations in Layar iPhone and iPad applications
- 2012 *Real-time Florida/Colorado Rainfall Interface*: A web-based interface for 6-hour animation of real-time rainfall intensity maps for Florida and Colorado.
- 2012 *Streamflow Visualization Interface*: A web-based interface for visualization of stream flow data on Google Maps using HTML 5 and canvas.
- 2012 *3D Interactive Book for IFIS*: A web-based 3D interactive children's book is designed about IFIS and hydrological concepts for educational purposes
- 2012 *IFIS Mobile*: BlackBerry PlayBook Tablet native application for Iowa Flood Information System (IFIS)
- 2012 *NASA Rain Gauge Network*: A web-based interface to access and visualize data on NASA rain gauge network
- 2011 *Flood Map Simulator Game*: A web-based flood simulator game to teach flood related concepts interactively
- 2011 *Flood Map 3D Simulation*: A web-based flood simulation for flying and navigating over the flood inundation map of Cedar Rapids, Iowa
- 2011 *The Pokki App Development Challenge entry*: Pokki web application for Iowa Flood Information System (IFIS)
- 2011 *EPA Apps for the Environment Challenge entry*: Google Chrome web application for Iowa Flood Information System (IFIS)
- 2011 *Health 2.0 Developer Challenge entry*: iPhone App Using Public Data for Cancer Prevention and Control, Database development, data integration
- 2011 *Flood Inundation Map Flight Simulator*: A real-time web-based flight simulator for navigating over a flood inundation map and remote control using iOS devices
- 2011 *Rainfall and Flood Forecast Simulation*: A real-time web-based simulation using HTML and canvas for rainfall and flood forecast data

- 2011 *Real-time Flood Inundation Map Simulation*: A real-time web-based simulation using HTML 5 and Canvas for Cedar Rapids, Iowa
- 2011 *Real-time Rainfall Drainage Tracker*: A real-time visualization interface in IFIS for rainfall drainage tracking
- 2011 *Apps for Science Challenge Entry: Get Inspired – A communication interface between academic platforms (Science Direct and Toxuu) to share data through web services*
- 2008 *Interactive Scientific Visualization of Water Quality Variables on Google Maps*: Data integration, map services, dynamic river structure generation, data visualization
- 2008 *Interactive Spatial Information Interface for USGS Monitoring Sites*: Real-time marker clustering, web services integration, web-based data visualization and analysis
- 2005 *Internet Explorer Toolbar for Daily Newspapers*
Internet Explorer Toolbar (like Google IE Toolbar) for specific features
- 2004 *TURKSA Coordinate v1.0*, Map Coordinating Software [Visual Basic]
Finding the spatial coordinates on a map image and exporting to MS Excel Worksheet
- 2004 *TAGEM Noise v1.0*, Noise Distribution Visualization Software [Visual Basic]
Spatial visualization of noise pollution observations
Company: TAGEM Technology, Kocaeli, TURKEY
- 2003 *Interactive Data Color Mapping in MS Excel*
Data visualization in 2 dimensions for given ranges up to 15 different color
- 2000 *IE Plug-in v1.0*, Using new domain extensions and Turkish character set in web sites
- 1998 *Satellite TV Configuration Program*, [ASP, VBScript, MS Access]
Configuration of satellite dish, Inb, multi-switch and receiver for home TV system

Visual Design and Web Development

1999-present Designed 200+ professional, academic and personal websites for companies and organization from various academic and industrial institutions

AWARDS & RECOGNITION

- 2025 **Congressional App Challenge Winner**, Internet Education Foundation (IEF), U.S. House of Representatives
Project: *CoFIS: Community-Oriented Flood Information System (student: Kento Sugiyama)*
- 2025 **Michael A. Fitts Presidential Chair in Environmental Informatics and Artificial Intelligence**, Tulane University
- 2024 **Elected Chair**, Leadership Board, International Joint Committee on Hydroinformatics (IAHR/IWA)
- 2023 **iEMSs Fellow**, International Environmental Modelling and Software Society

- 2023 **Innovations in Teaching with Technology Awards**, Academic Technologies Advisory Council, University of Iowa
- 2023 **Robert & Virginia Wheeler Faculty Fellow in Engineering**, College of Engineering at the University of Iowa, University of Iowa
- 2022 **Innovations in Teaching with Technology Awards**, Academic Technologies Advisory Council, University of Iowa
- 2022 **Distinguished Achievement in Publicly Engaged Research Award**, Office of the Vice President for Research, University of Iowa
- 2022 **Early Career Faculty Excellence Award**, College of Engineering, University of Iowa
- 2021 **Innovations in Teaching with Technology Awards**, Academic Technologies Advisory Council, University of Iowa
- 2020 **Finalist**, NIST CHARIoT Challenge - Advancing First Responder Communications
Project: *A Holographic Smart Assistant for Flood Preparedness and Response (project supervisor)*
- 2020 **Honor Award**, American Council of Engineering Companies (ACEC) 2020 Engineering Excellence Awards (EEA) - "Academy Awards of the Engineering Industry"
Project: *Big Sioux River Flood Information System (project supervisor)*
- 2020 **People's Choice Award**, Capture Your Research – Image Competition
Project: *Realistic River Image Generation with Deep Learning (project supervisor)*
- 2020 **Recognition**, United Nations World Water Development Report 2020: Water and Climate Change, Paris, UNESCO (highlighted projects from our lab)
- 2019 **Hydrologic Innovation Award**, National Hydrologic Warning Council
Project: *Iowa Flood Information System, IFC*
- 2019 **Preparedness, Technology and Innovation Award**, South Dakota Emergency Management Association (SDEMA)
Project: *Big Sioux River Flood Information System (project supervisor)*
- 2019 **Acknowledging Excellence**, Association of State Floodplain Managers
Project: *Draft Flood Hazard Outreach Program (DNR – contributor – cyber system development)*
- 2019 **Tom Lee State Award in Excellence in Floodplain Management**, Association of State Floodplain Managers
Project: *Iowa Bridge Sensor Project (IFC – contributor – cyber system development)*
- 2018 **Outstanding Engineering Achievement Award**, South Dakota Engineering Society (SDS)
Project: *Big Sioux River Flood Information System (project supervisor)*
- 2018 **Recognition**, U.S. Department of Homeland Security, Science & Technology Directorate, Report on Alerting Tactics (highlighted projects from our lab)

- 2018 **Early Career Research Excellence Award**, International Environmental Modeling and Software Society
- 2018 **Product of the Year**, 'Multi-Hazard Tournament', IWR, USACE (to the project team)
- 2018 **Outreach Award**, Association of State Floodplain Managers
Project: *Flood Expert – Artificial Intelligence System for Flooding (project supervisor)*
- 2018 **Innovation Award**, Scientific Visualization Challenge, US Bureau of Reclamation
- 2017 **Runner-up, Top 10**, AGU Data Visualization Storytelling Competition
- 2017 **2nd Place**, The Weather Channel SDC Innovation Challenge, Samsung & IBM
- 2015 **Nomination**, UIOWA Dean's Program, The American Society for Eng. Education (ASEE)
- 2015 **Outstanding Reviewer**, Environmental Modeling & Software, Elsevier
- 2015 **Runner-up**, ESRI Data Viz App Challenge, 'Make It Rain!'
- 2015 **Excellence Award for Research**, College of Engineering, University of Iowa
- 2014 **Invitation to White House**, Innovation for Disaster Response & Recovery Demo Day
- 2014 **Top 50**, Interactive Websites, 'Iowa Flood Information System', Information is Beautiful Awards 2014, Kantar
- 2013 **Innovations in Teaching with Technology Awards**, Academic Technologies Advisory Council, University of Iowa
- 2012 **Award**, NSF & Mozilla Foundation Ignite Challenge: Apps for Next-Generation Networks, Winner, Developer Round 1
- 2011 **Finalist**, NSF International Science and Engineering Visualization Challenge, Interactive Video Games Category
- 2010 **Award**, Best Oral Presentation, Second Annual Scientific Research Day, Graduate Students and Post-docs in Science, University of Georgia
- 2008 **Nomination**, for participation in the AAAS/Science Program for Excellence in Science
- 2008 **Research Grant**, Symposium Presentation Winner, Second Place
11th Annual Graduate Student Symposium, 28-29 February, UGA, Athens, GA
- 2005 **Elected**, Member for Sigma Xi - The Scientific Research Society
- 1997-2003 **Intelligence Olympics**, Semi-finalist [1997, 1998, 2002, 2003]
Turkey Intelligence Foundation (TZV)
- 1995 **TUBITAK (Turkish NSF) National Science Olympics**, Computer Science Division, TURKEY
Ranked second in the Mediterranean Region
- 2009-2017 15+ Early career travel support (as student, postdoc and faculty)

Media Coverage and Interviews

- [1] **Interview:** Project: 'ChatGPT Shows Promise as Teaching Tool'

Eydie Cubarrubia, ASME Magazine, April 24, 2024

- [2] **Interview:** Project: 'VirtualTA Initiative of An Indian Student in The US Set to Transform Educational Landscape'
Sandeep Raghavan, Times of India, March 10, 2024
The Times of India is the largest circulated English daily newspaper in the world (over 3m daily)
- [3] **Multiple Interviews:** Project: 'NOAA CIROH – Center for Hydrologic Development'
Daily Iowan, KCRG, WQAD, CBS2Iowa, Corridor Business, Iowa Public Radio, Iowa Engineering Magazine, 2022-2024
- [4] **Interview:** Project: 'Flood Risk Assessment for Agricultural Cropland in Iowa'
Richard C. Lewis, IowaNow, April 5, 2022
- [5] **Interview:** Project: 'Flood Mitigation Ethical Decision Support Framework'
Natasha Keicher, Daily Iowan, December 7, 2021
- [6] **Interview:** Project: 'Database highlights contaminants in private wells'
Julia Shanahan, Daily Iowan, July 16, 2019
- [7] **Interview:** Project: 'New Homeland Security report on new technologies for alerting public'
Erin Jordan, The Gazette, December 18, 2018
- [8] **Interview:** Project: 'University of Iowa Hackathon Competition'
Julia F. DiGiacomo, The Gazette, October 5, 2018
- [9] **Interview:** Project: 'An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin'
Erin Jordan, The Gazette, July 18, 2018
- [10] **Interview:** 'Iowa Flood Information System – flood damage estimate feature'
Kayla James, CBS2/FOX28 News, May 1, 2018
- [11] **Interview:** 'Iowa Flood Information System'
Kate Hayden, Business Record, innovationIOWA Magazine, April 16, 2018
- [12] **Interview:** Project: 'Flood AI: Artificial Intelligence System for Flooding'
Todd T. De Voe, EM Weekly, March 2, 2018
- [13] **Interview:** Project: 'Flood AI: Artificial Intelligence System for Flooding'
Skip Descant, GovTech Magazine, January 10, 2018
- [14] **Highlight:** Project: 'Flood AI: Artificial Intelligence System for Flooding'
Daily Iowan, KCRG-TV9, Business Record, GovTech Magazine, IFC, IIHR News, COE News, Iowa Now, and more...
- [15] **Interview:** 'New app uses artificial intelligence to give people real live flood data'
Ethan Fickau, KCRG-TV9, Dec 19, 2017
- [16] **Interview:** 'UI professor develops a Siri for flood information'
Sarah Watson, Daily Iowan, Nov 29, 2017

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- [17] **NSF Highlight:** ‘EarthCube 2015 Highlights: Faces of EarthCube – Ibrahim Demir, Informatics’
NSF EarthCube, All Hands Meeting, May 27, 2015
 - [18] **Interview:** ‘Iowa Flood Information System displayed at capitol today’
O. Kay Henderson, Radio Iowa, March 10, 2015
 - [19] **Interview:** ‘A Model for Turkey: Early Warning System for Flooding’ – (6-page)
Turkish National Science Foundation – Science and Technology Magazine, September 2014
 - [20] **Interview:** ‘University of Iowa: Turning a flood of data into flood safety’
BlackBerry Academic Spotlight, May 2013
 - [21] **Highlight:** Project: ‘Iowa Flood Information System (IFIS)’
Network World, Environmental Monitor, IowaNow, The Gazette, KCRG-TV9 News, CBS 2 Iowa, Google Maps Mania, UIOWA News Release, Iowa Env. Focus, NOAA & NWS News Release, Globe Gazette, Press Citizen, Muscatine Journal, Agri News, WQOV18 ABC Channel, and more...
 - [22] **Highlight:** Project: ‘Iowa Water Quality Information System (IWQIS)’
College of Engineering News, IIHR News, H₂O Line, CBS2Iowa, FOX28, Iowa Environmental Focus, Iowa Water Center, Research Buzz
 - [23] **Highlight:** Project: ‘National Flood Information System (FloodCube)’
NSF Press Release, Cisco Network News, NYC Media Lab Report
 - [24] **Highlight:** Project: ‘NASA Iowa Flood Studies (IFloodS)’
Press Citizen, NASA Press Release, Phys.org, Iowa Environmental Focus, SpaceRef, Pub Memo, UIOWA Engineering News, Iowa Science Interface
 - [25] **Highlight:** Project: ‘Fund-a-Sensor Initiative’
ND Stem Network, UI Foundation Press Release, Press Citizen, IowaNow, IIHR News
 - [26] **Highlight:** Other Projects: ‘Innovation in Teaching’, ‘Next Generation Network Applications’, ‘Application Development’, ‘Social Media Analytics for Flood Prediction’, ‘Internet of Things for Disaster Response’ and other group projects
COE Features, Press Citizen, IIHR Currents, The Gazette, Google Open Source Blog, IowaNow, ITS News, College of Engineering News, Gigabit KC, and many newspapers and TV stations
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PROFESSIONAL ACTIVITIES

University Service

- | | |
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| 2026-present | Member, Promotion and Tenure Committee, School of Science and Engineering, Tulane University |
| 2025-present | Member, Organizing Committee, Mississippi River Resilience and Restoration Science Synthesis Group, ByWater Institute, Tulane University |
| 2025-present | Member, Program Committee, Tulane Engineering Forum, Tulane University |
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2025-present	Member, AI Task Force, School of Science and Engineering, Tulane University
2025-present	Mentor, Faculty Mentoring Committee, RCSE / EES, Tulane University
2024-2025	Member, International Student Graduation Award Committee, International Programs
2024-2025	Member, DEI Student Metrics Working Group, Civil and Environmental Engineering
2024	Admitted Student Day, College of Engineering
2023-2025	Member, Faculty Review Committee, School of Planning and Public Affairs
2023-2025	Member, UI Academic AI Committee, Office of the Vice President for Research
2023-2025	Member, Conducting Research in Eng. Education Community of Practice, College of Eng
2022-2023	Chair, Faculty Search Committee, Civil and Environmental Engineering Department
2022-2023	Member, Faculty Perception of Administrators (FPOA), College of Engineering
2021-2025	Member, Graduate Studies Committee, Interdisciplinary Grad. Program in Informatics
2020-2022	Chair, Engineering Technology Council (ETC)
2020-2022	Member, DEI Action Committee, Civil and Environmental Engineering
2020	Explore Engineering@Iowa, University of Iowa
2018-2022	Member, AI/ML CoE Curriculum Working Group, College of Eng., University of Iowa
2019	Member, Reappointment Review Committee, IFC Director, University of Iowa
2018-2020	Member, Engineering Technology Council (ETC), University of Iowa
2017	Explore Engineering@Iowa, University of Iowa, April 8, 2017, Iowa City, IA, USA
2013-2016	Member, Information Technology Advisory Committee, University of Iowa
2012-2016	Member, Professional & Scientific Search Committee, Iowa Flood Center, IIHR

National and International Organization Boards & Committees

2025-present	Member, AI Committee, ASFPM – Association of State Floodplain Managers
2025-present	Member, Hydroinformatics Working Group, CIROH - Cooperative Institute for Research to Operations in Hydrology,
2024-present	Member, IAHR Council, International Association for Hydro-Environment Engineering and Research
2024-present	Chair, Leadership Board, International Joint Committee on Hydroinformatics (IAHR/IWA)
2022-2025	University Representative, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI)
2021-present	Member, Technical Advisory Team, Texas Integrated Flood Framework Initiative
2020-2022	Member, Board of Directors, Int. Environmental Modelling & Software Society
2020-2024	Member, Water Scholars, Iowa Water Center

2019-2021	Member, Technical Committee, IEEE Earth Science Informatics
2018-2021	Co-Lead, Benchmark Working Group, NSF IS-GEO Intelligent Systems for Geosciences
2016-2024	Member, Leadership Team, NSF Midwest Big Data Hub, Digital Agriculture Spoke
2016-2018	Member, Board of Directors, Int. Environmental Modelling & Software Society
2016-2019	Member, Steering Committee, Global Guidebook on Best Practices in Workforce Sustainability, International Water Association (IWA)
2015-2024	Vice-Chair, Leadership Board, International Joint Committee on Hydroinformatics (IAHR/IWA/IAHS)
2015-2023	Member, Steering Committee, NSF Geoscience Papers of the Future Initiative
2015-2018	Co-Chair, NSF EarthCube Standards and Standards Bodies Working Group
2014-2019	Member, Technology and Architecture Standing Committee, NSF EarthCube
2014-2018	Board Member, NSF EarthCube OntoSoft Advisory Board
2014-2018	Users Committee, Unidata Program Center, University Corporation for Atmospheric Research (UCAR)
2013-2015	Project Lead, The Global Environment for Network Innovations (GENI)
2012-2014	Member, Workflow Steering Committee, NSF EarthCube
2011-present	Informatics Standing Committee, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI)

Conference Organization & Services

2026	Keynote Speech, <i>'16th International Conference on Hydroinformatics'</i> , June 22-26, 2026, Zaragoza, Spain.
2026	Scientific Committee, <i>'16th International Conference on Hydroinformatics'</i> , June 22-26, 2026, Zaragoza, Spain.
2026	Scientific Committee, <i>'9th IAHR Europe Congress: Innovating Hydro-Environment Engineering for a Sustainable Future: Arctic Waters and Beyond'</i> , June 9-12, 2026, Luleå, Sweden.
2026	Program Committee, <i>'EnvirVis 2026 - Visualization in Environmental Sciences, EuroVis 2026'</i> , June 8-12, 2026, Nottingham, England.
2025	Scientific Committee, <i>'6th IAHR Young Professionals Congress'</i> , December 3-5, 2025, Online.
2025	Scientific Committee, <i>'41th IAHR World Congress'</i> , June 22-27, 2025, Singapore.
2025	Program Committee, <i>'EnvirVis 2025 - Visualization in Environmental Sciences, EuroVis 2025'</i> , June 2-6, 2025, Luxembourg City, Luxembourg.
2024	Scientific Committee, <i>'24th International Association for Hydro-Environment Engineering and Research Asia and Pacific Division Congress: Water for a Changing Future'</i> , October 14 - 17, 2024, Wuhan, China.

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- 2024 Session Organizer, *AGU Fall Meeting*, December 9-13, 2024, Washington, DC, USA
 - 2024 Scientific Committee, '*5th IAHR Young Professionals Congress*', Nov 27-29, 2024, Online.
 - 2024 Session Organizer, *12th International Congress on Environmental Modelling and Software (iEMSs)*, June 23–27, 2024, East Lansing, MI, USA.
 - 2024 Program Committee, '*EnvirVis 2024 - Visualization in Environmental Sciences, EuroVis 2024*', May 27-31, 2024, Odense, Denmark.
 - 2024 Scientific Committee, '*International Conference on the Smart Environment and Green Energy (ICSEGE)*', March 14-15, 2024, Baku, Azerbaijan.
 - 2024 Scientific Committee, '*15th International Conference on Hydroinformatics*', May 27-31, 2024, Beijing, China.
 - 2023 Scientific Committee, '*4th IAHR Young Professionals Congress*', Nov 22-24, 2023, Online.
 - 2023 Scientific Committee, '*International Conferences on Water Problems in Mediterranean Countries*', September 22-24, 2023, Nicosia, Northern Cyprus.
 - 2023 Scientific Committee, '*IAHR World Congress 2023*', August 21-25, 2023, Vienna, Austria.
 - 2023 Program Committee, '*EnvirVis 2023 - Visualization in Environmental Sciences, EuroVis 2023*', June 12, 2023, Leipzig, Germany.
 - 2022 Scientific Committee, '*14th International Conference on Hydroinformatics*', July 4-8, 2022, Bucharest, Romania.
 - 2022 Stream Leader, *2022 iEMSs Biennial Meeting*, July 4-8, 2022, Brussels, Belgium.
 - 2022 International Scientific Committee, *14th International Conference on Hydroinformatics IIC 2022 – Water INFLUENCE*, July 4-8, 2022, Bucharest, Romania.
 - 2022 Session Organizer, *IAHR World Congress 2022 - From Snow to Sea*, June 19-24, 2022, Granada, SPAIN.
 - 2022 Scientific Committee, *IAHR World Congress 2022 - From Snow to Sea*, June 19-24, 2022, Granada, SPAIN.
 - 2021 Session Organizer, *Frontiers in Hydrology Meeting by AGU and CUAHSI*, June 19-24, 2022, San Juan, Puerto Rico
 - 2021 Scientific Committee, *ICWRER 2022 - 9TH International Conference on Water Resources and Environment Research*, April 25-27, 2022, Orlando, FL, USA
 - 2021 Session Organizer, *ICWRER 2022 - 9TH International Conference on Water Resources and Environment Research*, April 25-27, 2022, Orlando, FL, USA
 - 2021 Scientific Committee, '*2nd IAHR Young Professionals Congress*', Nov 3 – Dec 2, 2021, Online.
 - 2021 Session Organizer, *AGU Fall Meeting*, December 13-17, 2021, New Orleans, LA, USA
 - 2021 Session Organizer, *ModSim 2021 - Workshop on Modeling & Simulation of Systems and Applications*, October 6-8, 2021, Seattle, WA, USA
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- 2021 Session Chair, *1st IAHR Online Forum: Hydro-Environmental Challenges, Solutions and Trends for Water Security*, July 5-7, 2021.
 - 2021 Program Committee, *'EnvirVis 2021 - Visualization in Environmental Sciences, EuroVis 2021'*, June 14-18, 2021, Zurich, Switzerland.
 - 2020 Session Organizer, *'Recent Advances and Future Directions in Hydroinformatics: From Data to Decision Making'*, AGU Fall Meeting, December 7-11, 2020, San Francisco, CA, USA
 - 2020 Scientific Chair, Session: Hydroinformatics, *'1st IAHR YPN Congress: 1st IAHR Young Professionals Congress'* November 17-18, 2020, Online.
 - 2020 Scientific Committee, *'1st IAHR YPN Congress: 1st IAHR Young Professionals Congress'* November 17-18, 2020.
 - 2020 Program Committee, *'EnvirVis 2020 - Visualization in Environmental Sciences, EuroVis 2020'*, May 25-29, 2020, Norrköping, Sweden.
 - 2019 Chair, *'UIOWA Hackathon'*, October 12-13, 2019, Iowa City, Iowa, USA.
 - 2019 Program Committee, *'Advanced Knowledge Technologies for Science in a FAIR World (AKTS) - IEEE eScience Conference'*, September 24, 2019, San Diego, CA, USA.
 - 2019 Session Organizer, *'An Open Knowledge Network for Geosciences'*, AGU Fall Meeting, December 9-13, 2019, San Francisco, CA, USA
 - 2019 Scientific Committee, *'2nd Conference of the AJGS'*, November 25-28, 2019, Tunisia.
 - 2019 Scientific Committee, *'IAHR World Congress 2019 Water – Connecting the World'*, September 1-6, 2019, Panama.
 - 2019 Program Committee, *'EnvirVis 2019 - Visualization in Environmental Sciences, EuroVis 2019'*, June 3-7, 2019, Porto, Portugal.
 - 2018 Scientific Committee, *'1st Conference of the AJGS'*, November 12-15, 2018, Tunisia.
 - 2018 Chair, *'UIOWA Midwest Big Data Hackathon, UIOWA'*, October 6-7, 2018, Iowa City, Iowa, USA.
 - 2018 Steering Committee, *'13th International Conference on Hydroinformatics'*, July 7-13, 2018, Palermo, Italy.
 - 2017 Chair, *'UIOWA Midwest Big Data Hackathon, UIOWA'*, September 16-17, 2017, Iowa City, Iowa, USA.
 - 2017 Program Committee, *'UIOWA Informatics Symposium'*, February 17-18, 2017, Iowa City, Iowa, USA.
 - 2017 Session Chair, "Disaster Management, Recovery, Floods & Climate" Session, *'UIOWA Informatics Symposium'*, February 17-18, 2017, Iowa City, Iowa, USA.
 - 2016 Chair, *'UIOWA Midwest Big Data Hackathon, UIOWA'*, October 8-9, 2016, Iowa City, Iowa, USA.
 - 2016 Steering Committee, *'12th International Conference on Hydroinformatics'*, August 21-25, 2016, Incheon, South Korea.
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- 2016 Program Committee, '*EnvirVis 2016 - Visualization in Environmental Sciences, EuroVis 2016*', June 6-10, 2016, Groningen, Netherlands.
 - 2016 Organizing Committee, Session Chair, '*Midwest Big Data Hub - Digital Agriculture Spoke All-Hands Meeting*', May 16-17, 2016, Iowa State University, Ames, IA, USA.
 - 2016 Session Organizer, '*Emerging Concepts of Hydroinformatics in Information Communication, Visualization and Sharing*', 12th International Conference on Hydroinformatics – Smart Water for the Future, August 21-26, 2016, Incheon, Korea.
 - 2016 Scientific Committee, '*NatHaz 16 – International Symposium on Natural Hazards and Hazard Management*', March 2-4, 2016, Karabuk, Turkey.
 - 2015 Organizer & Trainer, '*Geoscience Paper of the Future Training Sessions: Learning Best Practices for Scholarly Publication*', American Geophysical Union (AGU) Fall Meeting, December 14-18, 2015, San Francisco, CA, USA
 - 2015 Program Committee, '*EnvirVis 2015 - Visualization in Environmental Sciences, EuroVis 2015*', May 25-26, 2015, Cagliari, Italy.
 - 2015 Organizing Committee, '*2015 Unidata Users Workshop Data-driven Geoscience: Applications, Opportunities, Trends, and Challenges*', June 22-25, 2015, Boulder, CO, USA
 - 2014 Session Chair, '*HIC 2014 – 11th International Conference on Hydroinformatics*', August 17-21, 2014, New York, NY, USA
 - 2014 Program Committee, '*8th International Congress on Environmental Modelling and Software (iEMSs)*', June 15-19, 2014, San Diego, CA, USA
 - 2013 Session Organizer, '*Future of Hydroinformatics in Access, Visualization, and Analysis of Large-Scale Hydrological Data*', AGU Fall Meeting, December 9-13, 2013, San Francisco, CA, USA
 - 2013 Session Organizer, '*Hydroinformatics in Modeling, Scientific Visualization and Information Communication*', European Geosciences Union General Assembly 2013, December 7-12, 2013, Vienna, Austria
 - 2012 Session Organizer, '*Informatics in Hydrological Modeling and Information Communication*', AGU Fall Meeting, December 3-7, 2012, San Francisco, CA, USA
 - 2012 Session Organizer, '*Designing a Roadmap for Workflow Cyberinfrastructure in the Geosciences: From Big Data to the Long Tail*', AGU Fall Meeting, December 3-7, 2012, San Francisco, CA, USA
 - 2012 Co-Chair, '*EarthCube Community Workshop: Designing A Roadmap for Workflows in Geosciences*', June 5, 2012, Boulder, CO, USA.
 - 2011 Scientific Committee, '*International Symposium on Environmental Protection and Planning: Geographic Information Systems (GIS) and Remote Sensing (RS) Applications (ISEPP)*', June 28-29, 2011, Gediz University, Izmir, TURKEY
 - 2011 Scientific Committee, '*2nd International Conference on Informatics (ICI-2011)*', April 27-29, 2011, Çanakkale Onsekiz Mart University, Çanakkale, TURKEY
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- 2010 Session Moderator, 'Warnell Graduate Student Research Symposium', March 4-5, 2010, University of Georgia, Athens, GA, USA
- 2009 Technical Volunteer, 'Southern Forestry & Natural Resource Management GIS Conference', December 7-9, 2009, University of Georgia, Athens, GA, USA

Grant/Award Review Panels

- › Proposal Review, Dutch Research Council, Netherlands, 2025
- › Proposal Review, NSF STTR Program, US, 2025
- › Proposal Review, United Kingdom Research and Innovation (UKRI), 2024
- › Proposal Review, NOAA CIROH Research Grants, US, 2023
- › Proposal Review, Helmholtz Association of German Research Centres, 2023
- › Proposal Review, National Natural Science Foundation of China (NSFC) and the Israel Science Foundation (ISF), 2023
- › Proposal Review, German Research Foundation, 2023
- › Proposal Review Panel, NSF LEAP HI Program, US, 2022
- › Proposal Review, Israel Ministry of Innovation, Science and Technology, 2022
- › Proposal Review, Gulf of Mexico Alliance, US, 2022
- › Proposal Review, Hatch Project, USDA-NIFA, US, 2022
- › Proposal Review, NSF Geoinformatics Program, US, 2021
- › Proposal Review, Austrian Federal Ministry of Education, Science and Research, 2021
- › Book Proposal Review, Geological Society of America, 2021
- › Book Proposal Review, Taylor and Francis, 2019
- › Internal Review Panel, NSF Science and Technology Center, US, 2019
- › Proposal Review Panel, Iowa Academy of Science, Iowa, US, 2019
- › Proposal Review Panel, CUAHSI Hydroinformatics Innovation Fellowship, US, 2018-2023
- › Proposal Review Panel, CGRER Seed Grant, UIOWA, US, 2018, 2020
- › Proposal Review Panel, Natural Environment Research Council, UK, 2020
- › Proposal Review Panel, Oak Ridge Associated Universities (ORAU), US, 2017
- › Proposal Review Panel, Graduate Research Fellowship Program (GRFP), NSF, US, 2017
- › Proposal Review Panel, Graduate Fellowship Program, NASA - IA Space Grant Consortium, US, 2016
- › Review Panel, Staff Excellence Awards, College of Engineering, University of Iowa, US, 2016
- › Review Panel, Summer Institute Awards, NFIE, National Water Center, US, 2016
- › Proposal Review Panel, Unidata Community Equipment Awards, UCAR, US, 2015

Editorial Board for Journals

- › Associate Editor, Digital Water: Knowledge Application & Hydroinformatics, Taylor & Francis, 2023-**present**
- › Editor, Cambridge Prisms: Water, Cambridge University Press, 2023-**present**
- › Associate Editor, Water and Artificial Intelligence, Frontiers in Water, 2022-**present**
- › Associate Editor, Journal of Environmental Informatics, ISEIS, 2020-**present**
- › Associate Editor, Journal of Hydroinformatics, IWA, 2017-**present**

- › Associate Editor, Environmental Modeling and Software, Elsevier, 2015-present
- › Associate Editor, Smart Water, Springer, 2018-2022
- › Associate Editor, A. Journal of Geosciences, Springer, 2017-2019

Guest Editorial for Journals

- › Guest Editor, Water & Ecology, Elsevier, 2025-2026
- › Guest Editor, Special Issue: "Next Generation Hydroinformatics Applications in Water Resources: From AI to Digital Twins", Journal of Hydroinformatics, 2022-2023
- › Guest Editor, Special Issue: "Flood Inundation Mapping in Hydrological Systems", Hydrology, 2022-2023
- › Guest Editor, Special Issue: "Frontiers in Urban Water Infrastructure", Water, 2021-2023
- › Guest Editor, Special Issue: "Next Generation Visualization and Communication Systems for Earth Science Using Immersive Reality and Serious Gaming", Frontiers in Earth Science, 2021-2023
- › Guest Editor, Special Issue: "Application of Machine Learning and Artificial Intelligence in Surface Flow Simulation", Applied Sciences, 2020-2021

Reviewer for Journals

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| › Advances in Water Resources, Elsevier | › Journal of American Water Res. Assoc., Wiley |
| › Applied Water Science, Springer | › J. of Applied Water Eng. & Res., Taylor & Francis |
| › Bulletin of American Meteorological Soc., AMS | › Journal of Atmospheric and Oceanic Tech., AMS |
| › Cambridge Prisms: Water | › Journal of Computing in Civil Engineering, ASCE |
| › CLEAN – Soil, Air, Water, Wiley | › Journal of Environmental Management, Elsevier |
| › Computer-Aided Civil and Infra. Eng., Wiley | › Journal of Flood Risk Management, Wiley |
| › Computers, MDPI | › Journal of Hydroinformatics, IWA |
| › Computers & Geosciences, Elsevier | › Journal of Hydrologic Engineering, ASCE |
| › Computers & Graphics, Elsevier | › Journal of Hydrology, Elsevier |
| › Computers & Industrial Engineering, Elsevier | › Journal of Hydrology – Regional Studies, Elsevier |
| › Ecological Economics, Elsevier | › Journal of Hydrometeorology, AMS |
| › Ecological Informatics, Elsevier | › J. of Inf. & Telecommunication, Taylor & Francis |
| › Earth and Space Science, AGU | › Journal of Membrane Science, Elsevier |
| › Earth Science Informatics, Springer | › J. of Struc. Integrity and Main., Taylor & Francis |
| › Eng. Apps. of Artificial Intelligence, Elsevier | › Journal of Visualized Experiments, JoVE |
| › Environmental Challenges, Elsevier | › Journal of Selected Topics in Applied Earth Observations and Remote Sensing, IEEE |
| › Env. Eng. and Management Journal, IASi | › Nature, Springer |
| › Env. Modeling and Software, Elsevier | › Nature Communications, Springer |
| › Env. Monitoring and Assessment, Springer | › Natural Hazards, Springer |
| › Environment, Systems and Decisions, Springer | › Natural Hazards and Earth System Sci., EGU |
| › Frontiers of Env. Sci. & Eng. in China, Springer | › Ocean & Coastal Management, Elsevier |
| › Geomatics, Natural Hazards and Risk, Taylor & Francis | › Pedosphere, Elsevier |
| › Geophysical Research Letters, Wiley | › PLOS One, PLOS |

- › Geosciences, MDPI
- › Hydrological Sciences Journal, Taylor & Francis
- › Hydrology and Earth System Sciences, EGU
- › Hydrological Processes, Wiley
- › Informatics, MDPI
- › Information, MDPI
- › Int. Journal of Comp. and App., Taylor & Francis
- › Int. Journal of Disaster Risk Reduction, Elsevier
- › Int. Journal of Disaster Risk Science, Springer
- › Int. Journal of River Basin Man., Taylor & Francis
- › Soft Computing, Springer
- › Sustainable Cities and Society, Elsevier
- › Smart Water, Springer
- › Symmetry, MDPI
- › Technology, Knowledge and Learning, Springer
- › Water, MDPI
- › Water Resources Research, AGU
- › Water Science and Engineering, Elsevier

Reviewer for Conferences

- › AGU Fall Meeting, 2011-2014, San Francisco, CA, USA
- › AMIA 2021 Annual Symposium, 2021, San Diego, CA, USA
- › Annual James F. Jakobsen Graduate Conference, 2012, Iowa City, IA, USA
- › EnvirVis - Visualization in Environmental Sciences, EuroVis 2015, 2016, 2019-2026.
- › Georgia Junior Science & Humanities Symposium, 2010, 2011, Athens, GA, USA
- › GIS Day at Kansas University, 2019, Lawrence, KS, USA.
- › IAHR World Congress, 2019, 2022, 2023.
- › IAHR YPN Congress, 2020, 2021, 2022, 2023, 2024.
- › ICML 2026, 43 International Conference on Machine Learning, 2026
- › Idea Storm Competition, JPEC, University of Iowa, 2021
- › International Conference on Flood Management - ICFM, 2021
- › International Conference on Hydroinformatics, 2020-2026
- › International Congress on Environmental Modelling and Software (iEMSs), 2014, 2018, 2024
- › Research Open House, College of Engineering, University of Iowa, 2012, Iowa City, IA, USA
- › Sigma XI Student Research Showcase, 2013, USA
- › SIGGRAPH, Conference & Exhibition in Computer Graphics & Interactive Techniques, 2021, 2023
- › Singapore International Water Week 2020 - Water Convention, 2020
- › IWA World Water Congress & Exhibition, IWA, 2010, 2011, 2012, 2014, 2020

Professional Society Memberships

- › AAAS – American Association for the Advancement of Science
- › ACM – Association for Computing Machinery
- › AGU – American Geophysical Union
- › AMS – American Meteorological Society
- › ASEE – American Society for Engineering Education
- › ASCE – American Society of Civil Engineers
- › ASFP – Association of State Floodplain
- › EWRI – Environmental & Water Resources Institute
- › GSA – Geological Society of America
- › IAHR – International Association for Hydro-Environment Engineering and Research
- › IAHS – Int. Association of Hydrological Sciences
- › IAS – Iowa Academy of Science
- › iEMSs – International Environmental Modelling & Software Society

Managers

› EGU – European Geosciences Union

› IWA – International Water Association

› Sigma Xi – Scientific Research Society
