

IBRAHIM DEMIR

DIRECTOR, UI HYDROINFORMATICS LAB*

ASSOCIATE PROFESSOR, CEE, ECE

ASSOCIATE RESEARCH PROFESSOR, IIHR, IFC

UNIVERSITY OF IOWA



UI HYDROINFORMATICS LAB

CONTACT INFORMATION

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RESEARCH INTERESTS AND EXPERIENCE

- › Hydroinformatics, environmental informatics, database, and data management systems
- › Information and intelligent systems, internet, blockchain and web technologies
- › Scientific visualization, information communication and visual data analytics applications
- › High-performance computing, GPU-based visualization, and scientific software development
- › Artificial intelligence, deep neural networks, fuzzy logic, and genetic algorithms applications
- › Big-data science, data mining, cloud computing, web and social media analytics and visualization
- › Cyberlearning systems, game-based learning, virtual, augmented and mixed reality applications

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

2021-present **Associate Professor** -- *main appointment – tenure track*
Department of Civil and Environmental Engineering, University of Iowa

2021-present **Associate Professor** -- *secondary appointment – tenure track*
Department of Electrical and Computer Engineering, University of Iowa

2021-present	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-present	Associate Research Professor (Faculty Engineer) – research faculty track IIHR-Hydrosience & Engineering, Iowa Flood Center, University of Iowa
2018-present	Faculty Affiliate Mid-America Transportation Center, US DOT
2016-present	Informatics Cluster Faculty – cluster joint hire The Iowa Informatics Initiative, University of Iowa
2016-present	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-present	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-present	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-present	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 May-Nov	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	B.S. Research Project , Computational Chemistry Bogazici (Bosporus) University, Istanbul, TURKEY

TEACHING EXPERIENCE & EDUCATIONAL SERVICES

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 Densified Monitoring and Data Integration for Hydrological Datasets
2013 Summer	Mentoring & Project Advisor, Google Summer of Code Program Mentoring three students for design and development of open-source programming projects for the Iowa Flood Center
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)

STUDENT AND RESEARCHER ADVISING AND MENTORING

Current Students and Researchers

Thesis & Dissertation Advisor – Project Supervisor	M. Ali Sit, 2019- present , PhD, Informatics Gregory J. Ewing, 2019- present , PhD, Civil and Environmental Engineering Yazeed Alabbad, 2019- present , PhD, Civil and Environmental Engineering Zhouyayan Li, 2020- present , PhD, Civil and Environmental Engineering Bekir Z. Demiray, 2021- present , PhD, Informatics Carlos E. Ramirez, 2021- present , PhD, Civil and Environmental Engineering Ram Sajja, 2022- present , MS, Electrical and Computer Engineering Nikhil Singh, 2022- present , MS, Computer Science Beyza Cikmaz, 2022- present , MS, Urban Planning
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Postdoctoral Researchers & Engineers	Ozlem B. Yesilkoy, 2021- present , Postdoctoral Researcher Serhan Yesilkoy, 2021- present , Postdoctoral Researcher M. Yusuf Sermet, 2020- present , Postdoctoral Researcher Jerry Mount, 2019- present , Senior Researcher
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Part-time Students / Researchers	Jiaqi Zhao, 2022- present , High School (intern) Joshua Qin, 2022- present , High School (intern) Zitong Wang, 2022- present , High School (intern) Sahil Bhatia, 2022- present , High School (intern) Muhammed Cikmaz, 2022- present , High School (intern) Mehmed Sahin, 2022- present , High School (intern) Shiva Goli, 2022- present , High School (intern)
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Thesis & Dissertation Committees	Haoyi Xiong, 2021- present , Geographical and Sustainability Science, UIOWA Pin-Ching Li, 2021- present , PhD, CEE, Purdue University
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Alumni & Past Students and Researchers

Graduate Enes Yildirim, 2017-2022, PhD, CEE (now GIS Coordinator at Iowa DNR)
Students with Zhongrun Xiang, 2017-2022, PhD, CEE (now Principal Data Scientist, Capital One)
Thesis / Yusuf Sermet, 2015-2020, PhD, ECE (now Postdoc at UIOWA)
Dissertation Haowen Xu, 2015-2019, PhD, CEE (now Postdoc at ORNL)
 Carlos E. Ramirez, 2018-2020, MS, CEE (now PhD student at UIOWA)
 Enes Yildirim, 2015-2017, MS, CEE (now PhD student at UIOWA)

Graduate Ashani Vaidya, 2021-2022, MS, Computer Science
Students Fully Vahid E. Akhlaghi, 2020-2022, PhD, Business Analytics
Funded by Lab – Zeeshan Ahmed, 2021, MS, Computer Science
non-thesis Nikhil Singh, 2021, MS, Computer Science
 Bekir Z. Demiray, 2019-2021, MS, Computer Science (now PhD student at UIOWA)
 Muneeb Shahid, 2019-2021, MS, Computer Science
 Isha Panvalkar, 2020, MS, CS, UIOWA
 M. Ali Sit, 2017-2019, MS, CS (now PhD student at UIOWA)
 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 (now PhD student at IUPUI)
 Haider Hameed, 2015-2017, MS, CS (now at Amazon)
 Osman Sonmez, 2012-2013, PhD, IIHR (now Prof at Sakarya Univ)

Thesis & Navid Jadidoleslam, 2016-2021, PhD, CEE
Dissertation Mohsen Vahidzadeh, 2019-2020, PhD, CEE
Committees Ali Cikmaz, 2015-2020, PhD, Education
 Andre D. L. Zanchetta, 2015-2017, MS, CEE
 Vahid E. Akhlaghi, 2020-2022, PhD, Business Analytics, UIOWA

Researchers & Andre D. L. Zanchetta, 2017-2018, MS, CEE (now PhD student)
Engineers Samuel Debionne, 2015-2017, Software Developer
 Dixon Vimalajeewa, 2021, Postdoc, CS

Part-time Qiuyu Gu, 2022, BS, CS
Students / Beyza Cikmaz, 2021, BS, UP
Researchers Kane Templeton, 2021, MS, CS
 Ryan Skrzypek, 2021, BSE, CSE
 Kevin Nguyen, 2021, BA, Business
 Serena Chen, High School, 2021 (intern)
 Luana Liao, High School, 2021 (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

PUBLICATIONS & PRESENTATIONS

Thesis & Dissertation

- [1] PhD Dissertation, 'Integrated Web-Based Data Management, Analysis and Visualization: Towards an Adaptive Watershed Information System', 2010
Supervisor: 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
Supervisors: Guleda Onkal-Engin and Mehmet Karpuzcu, Gebze Institute of Technology, TURKEY

Books

- [3] Book: 'Artificial Intelligence in Hydroinformatics', Volume: 'Advanced Machine Learning' 2023, **Taylor & Francis**. Edited by Demir, I., Freni, G. (in contract/preparation)

Book Chapters

- [4] Demir, I., Encyclopedia Chapter on 'Cyberinfrastructure Systems for Flood Preparedness and Response'
Book: 'Oxford Research Encyclopedia of Natural Hazard Science', ISBN: 9780199389407 2022, **Oxford University Press**. Edited by Susan L. Cutter et al. (in contract/preparation)
- [5] Sit, M.A., Koylu, C. & Demir, I., Chapter on '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.
- [6] Sermet, Y., Demir, I., Chapter on '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
- [7] Muste, M., Kim, D., Demir, I., Chapter on 'Hydroinformatics Applied to Hydraulic Experiments',
Book: 'Experimental Hydraulics', Volume I. ISBN: 9780367573263 2017, **Taylor & Francis**. Edited by J. Aberle et al.

Patents

- [8] **Demir, I.**, Sermet, Y., 2020, Camera-Based Liquid Stage Measurement, U.S. Provisional Patent Application. 63/005,754, filed on April 6, 2021.

Journal Articles

2022

- [9] 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*, 2022. (in review)
- [10] Cıkmaç, B., Yildirim, E., **Demir, I.**, 'Flood Susceptibility Mapping using Fuzzy Analytical Hierarchy Process for Cedar Rapids, Iowa'. *International Journal of Disaster Risk Reduction*, 2022. (in review)
- [11] Sit, M.A., **Demir, I.**, 'Democratizing Deep Learning Applications in Earth and Climate Sciences on the Web: EarthAIHub'. *Earth Science Informatics*, 2022. (in review)
- [12] 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*, 2022. (in review)
- [13] 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 and Software*, 2022. (in review)
- [14] Xiang, Z., **Demir, I.**, 'Real-Time Streamflow Forecasting Framework, Implementation and Post-Analysis Using Deep Learning'. *Geophysical Research Letters*, 2022. (in review)
- [15] Sermet, Y., **Demir, I.**, 'Camera-Based Intelligent Stream Stage Sensing for Decentralized Environmental Monitoring'. *Science of the Total Environment*, 2022. (in review)
- [16] **Demir, I.**, Xiang, Z., Demiray, B.Z., Sit, M.A., 'WaterBench: A Large-scale Benchmark Dataset for Data-Driven Streamflow Forecasting'. *Environmental Modelling and Software*, 2022. (in review)
- [17] Shahid, M., Sermet, Y., **Demir, I.**, 'Towards Progressive Geospatial Information Processing on Web Systems: A Case Study for Watershed Analysis in Iowa'. *Computers and Geosciences*, 2022. (in review)
- [18] Xiang, Z., **Demir, I.**, 'Fully distributed rainfall-runoff modeling using spatial-temporal graph neural network'. *Water Resources Research*, 2022. (in review)
- [19] Zhu, Z., Lin, S., Herr, K., Chi, C., **Demir, I.**, Chi, N., 'Using Artificial Intelligence to Improve Pain Assessment and Pain Management: A Scoping Review', *Journal of Telemedicine and Telecare*, 2022. (in review)
- [20] 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*, 2022. (in review)
- [21] Ramirez, C.E., Sermet, Y., Molkenhain, F., **Demir, I.**, 'HydroLang: An Open-Source Web-Based Programming Framework for Hydrological Sciences'. *Environmental Modeling and Software*, 2022. (in review)

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- [22] Xiang, Z., **Demir, I.**, Mantilla, R., Krajewski, W.F., 'A Regional Semi-Distributed Streamflow Model Using Deep Learning'. *Journal of Hydrology*, 2022. (in review)
- [23] 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.
- [24] Xiang, Z., **Demir, I.**, 'Flood Markup Language—A Standards-based Exchange Language for Flood Risk Communication'. *Environmental Modeling and Software*, 152, 105397, 2022.
- [25] Alabbad, Y., **Demir, I.**, 'Comprehensive flood vulnerability analysis in urban communities: Iowa case study'. *International Journal of Disaster Risk Reduction*, 74, 102955, 2022.
- [26] 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.
- [27] Yildirim, E., **Demir, I.**, 'Agricultural flood vulnerability assessment and risk quantification in Iowa', *Science of the Total Environment*, 826, 154165, 2022.
- [28] Gautam, A., Sit, M.A., **Demir, I.**, 'Realistic River Image Synthesis using Deep Generative Adversarial Networks', *Frontiers in Water*, 2022.
- [29] Li, Z., Mount, J., **Demir, I.**, 'Accounting for uncertainty in real-time flood inundation mapping using HAND model: Iowa case study'. *Natural Hazards*, 2022.
- [30] Sermet, Y., **Demir, I.**, 'GeospatialVR: A Web-based Virtual Reality Framework for Collaborative Environmental Simulations'. *Computers and Geosciences*, Volume 159, 105010, 2022.
- [31] 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

- [32] 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.
- [33] 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.
- [34] 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.
- [35] 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.
- [36] Hu, A., **Demir, I.**, 'Real-time Flood Mapping on Client-side Web Systems using HAND model'. *Hydrology*, 8 (2), 65, 2021.

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- [37] 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.
- [38] 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.
- [39] 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.
- [40] 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.
- [41] 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.
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2020

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- [42] 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.
- [43] 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.
- [44] Sermet, Y., **Demir, I.**, Muste, M., 'A Serious Gaming Framework for Decision Support on Hydrological Hazards', *Science of The Total Environment*, p.138895, 2020.
- [45] Xiang, Z., Yan, J., **Demir, I.**, 'A Rainfall-Runoff Model with LSTM-based Sequence-to-Sequence Learning', *Water Resources Research*, 56 (1), 2020.
- [46] 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.
- [47] 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.
- [48] 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.
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2019

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- [49] Sermet, Y., **Demir, I.**, 'Towards an Information Centric Flood Ontology for Information Management and Communication', *Earth Science Informatics*, 12 (4), 541-551, 2019.
- [50] 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.
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- [51] 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.
- [52] Yildirim, E., **Demir, I.**, 'An Integrated Web Framework for HAZUS-MH Flood Loss Estimation Analysis', *Natural Hazards*, 99:1, 275-286, 2019.
- [53] 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.
- [54] 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.
- [55] 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.
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2018

- [56] Sermet, Y., **Demir, I.**, 'An Intelligent System on Knowledge Generation and Communication for Flooding', *Environmental Modeling and Software*, 108, 51-60, 2018.
- [57] 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.
- [58] 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.
- [59] 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.
- [60] **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.
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2017 and before

- [61] **Demir, I.**, Szczepanek, R., 'Optimization of River Network Representation Data Models for Web-based Systems', *Earth and Space Science*, Volume 4, Issue 6, 2017.
- [62] 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. [article chosen as journal cover image]
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- [63] 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.
- [64] **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.
- [65] **Demir, I.**, Krajewski, W., 'Towards an integrated Flood Information System: Centralized data access, analysis, and visualization', *Environmental Modeling and Software*, 50, 77-84, 2013.
- [66] 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.
- [67] 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.
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- [308] **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, Workshops & Presentations

- [309] **Demir, I.**, Muste, M., Sermet, Y., 'RIMORPHIS: River Morphology Information System', ASCE Lehigh Valley Section, February 23, 2022.
- [310] **Demir, I.**, 'Next Generation Hydroinformatics Applications in Environmental Science and Water Resources', ASCE Lehigh Valley Section, February 23, 2022.
- [311] 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.
- [312] Xiang, Z., **Demir, I.**, 'Fully distributed rainfall-runoff modeling using graph neural network', Iowa Flood Center, January 26, 2022.
- [313] 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.
- [314] Alabbad, Y., **Demir, I.**, 'Flood Mitigation Data Analytics and Decision Support Framework: Iowa Middle Cedar Watershed Case Study', Iowa Flood Center, December 1, 2021.
- [315] **Demir I.**, 'Next Generation Hydroinformatics Applications for Disaster Analytics and Communication', *Australian Water School*, December 1, 2021, Online.
- [316] **Demir I.**, 'AI and Intelligent Systems Applications in Geoscience', *Department of Geographical and Sustainability Sciences*, November 19, 2021, University of Iowa.
- [317] **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.
- [318] Ewing, G., **Demir, I.**, 'WebHLM: A Client-Side Web Environment for Hydrologic Modeling and Education', Iowa Flood Center, August 18, 2021.
- [319] Xiang, Z., **Demir, I.**, 'Regional Streamflow Modeling Using Deep Learning', Iowa Flood Center, August 4, 2021.

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- [320] Ramirez, C.E., Sermet, Y., Molkenthin, F., **Demir, I.**, 'HydroLang: An Open-Source Web-Based Programming Framework for Hydrological Sciences', Iowa Flood Center, July 14, 2021.
- [321] Jones, C., et al., **Demir, I.**, 'Upper Mississippi Information System', Water Data Forum, Cleveland Water Alliance, April 20, 2021, Virtual.
- [322] **Demir, I.**, 'Panel: AI in High-Stakes Situations: AI Systems for Flood Communication and Analytics', ISI AI Futures Symposium, January 12-13, 2021, Virtual.
- [323] Yildirim, E., **Demir, I.**, 'Flood Mitigation and Data Analytics Framework: Middle Cedar Case Study', Iowa Flood Center, December 16, 2020.
- [324] Sermet, Y., **Demir, I.**, 'GeospatialVR: A Web-based Virtual Reality Framework for Collaborative Environmental Simulations', Iowa Flood Center, December 16, 2020.
- [325] Alabbad, Y., **Demir, I.**, 'Wayfinding and accessibility analysis for critical amenities in Iowa during flood events', Iowa Flood Center, July 22, 2020.
- [326] Xiang, Z., **Demir, I.**, 'Long-term forecasting of streamflow with deep learning models', Iowa Flood Center, July 15, 2020.
- [327] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', Cloud2Street, July 10, 2020.
- [328] Ewing, G., **Demir, I.**, 'An Ethical Decision-Making Framework: Smart Water Case Study on Flooding', Iowa Flood Center, July 1, 2020.
- [329] Li, Z., **Demir, I.**, 'HAND Model Evaluation Study and Real-Time Flood Mapping System', Iowa Flood Center, June 24, 2020.
- [330] **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-side Web Systems', IS-GEO Meeting, April 7, 2020.
- [331] 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.
- [332] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', IBM Precision Agriculture Workshop, January 7, 2020, Iowa City, IA.
- [333] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', NSF Convergence Accelerator-Open Knowledge Network EarthCube Workshop, January 6, 2020, Bethesda, MD.
- [334] **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.
- [335] **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.
- [336] **Demir, I.**, 'Next Generation Data Analytics and Communication Systems for Flooding', 2019 MATC Flood Research Workshop, November 25, 2019, University of Nebraska, Lincoln, NE.

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- [337] **Demir, I.**, Campbell, A., 'Transportation Planning for Floods', 2019 MATC Flood Research Workshop, November 25, 2019, University of Nebraska, Lincoln, NE.
- [338] **Demir, I.**, 'Iowa Flood Information System (IFIS) Vision and Demo', 2019 MATC Flood Research Workshop, November 25, 2019, University of Nebraska, Lincoln, NE.
- [339] **Demir, I.**, 'Intelligent Systems and Data Analytics for Disaster Risk Communication', November 22, 2019, Purdue University, Online.
- [340] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', GIS Day 2019, November 13, 2019, University of Kansas, Lawrence, KS.
- [341] **Demir, I.**, Bruner, R., 'Water Quality Information Systems and Data Exchange Network', R7/R8 EPA Exchange Network Workshop, October 1, 2019, Online.
- [342] **Demir, I.**, Langel, R., Sit, M.A., 'The Iowa Well Forecasting System (IWfOS)', Iowa Flood Center, August 21, 2019, Iowa City, IA.
- [343] **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
- [344] **Demir I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', *Canada Centre for Mapping and Earth Observation, Natural Resources Canada*, June 20, 2019, Online.
- [345] **Demir I.**, 'Communication of Extreme Events using Intelligent Systems and Visualization', *Department of Geographical and Sustainability Sciences*, April 19, 2019, Iowa City, IA, USA.
- [346] **Demir I.**, 'Intelligent Data Analytics and Visualization Systems for Transportation', *Iowa DOT Meeting*, UIOWA, November 9, 2018, Iowa City, IA, USA.
- [347] **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.
- [348] **Demir, I.**, 'Flood Damage and Loss Estimation on Web-based Systems', Guest Lecture, HAZUS User Call, August 8, 2017, Webinar.
- [349] **Demir, I.**, 'Cyberinfrastructure Systems for Big Data Management, Analysis, and Visualization', Guest Lecture, Computer Science, UIOWA, April 28, 2017, Iowa City, IA, USA.
- [350] **Demir, I.**, Machine Learning: Farm-to-Table Workshop, April 18-19, 2017, University of Illinois in Urbana-Champaign, Urbana, IL, USA.
- [351] **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.
- [352] **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.

- [353] **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.
- [354] **Demir, I.**, 'Cyberinfrastructure Systems for Big Data Management, Analysis, and Visualization', Webinar, HDR Engineering, February 7, 2017, Iowa City, IA, USA.
- [355] **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.
- [356] **Demir, I.**, 'Iowa Flood Center Data Resources and Iowa Flood Information System', National Water Center Summer Institute, June 13, 2016, Tuscaloosa, AL, USA.
- [357] **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.
- [358] **Demir, I.**, 'NSF Career Workshop', Training, UIOWA, OVPR, March 24, 2016.
- [359] **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.
- [360] **Demir, I.**, 'Next Generation Hydroinformatics Systems for Big Data Management, Analysis, and Visualization', Invited Talk, XSEDE Science Gateway Community Webinar, February 26, 2016.
- [361] **Demir, I.**, 'Scientific Visualization and Information Communication in Hydrological Sciences', Guest Lecture, IIHR, University of Iowa, February 4, 2016, Iowa City, IA, USA.
- [362] **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
- [363] **Demir, I.**, 'Game-based and Interactive Learning Environments', Tenth Annual Sonia Kovalevsky High School Mathematics Day, April 11, 2015, Iowa City, IA, USA
- [364] **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
- [365] **Demir, I.**, 'Interactive Visualization of Scientific Data using Web Technologies', PDE Seminar, Mathematics Department, University of Iowa, December 3, 2014, Iowa City, IA, USA
- [366] **Demir, I.**, Invitation to the **White House** Innovation for Disaster Response and Recovery Demo Day, July 29, 2014, Washington, DC, USA
- [367] **Demir, I.**, Collaboration Visit at NASA Scientific Visualization Studio at NASA Goddard Space Flight Center, June 2-6, 2014, Greenbelt, MD, USA
- [368] **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

- [369] **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
- [370] **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
- [371] **Demir, I.**, 'FloodCube: National Flood Information System', US Ignite – Gigabit Explorer Challenge, November 1-3, 2013, Kansas City, MO, USA.
- [372] **Demir, I.**, Mentor Summit, Google Summer of Code 2013, October 19-20, 2013, Mountain View, CA, USA.
- [373] **Demir, I.**, 17th GENI (The Global Environment for Network Innovations) Engineering Conference (GEC17), July 21-23, 2013, Madison, WI, USA.
- [374] **Demir, I.**, 'Flood Cube – National Flood Information Platform', US Ignite – Next Generation Application Summit, June 24-26, 2013, Chicago, IL, USA.
- [375] **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.
- [376] **Demir, I.**, 'Information Systems for Resource Management', Course Lecture, Civil and Environmental Engineering, University of Iowa, May 29, 2013, Iowa City, IA, USA.
- [377] **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.
- [378] **Demir, I.**, 'Future of Scientific Visualization and Online Mapping', GIS Day 2013, University of Iowa, April 25, 2013, Iowa City, IA, USA.
- [379] **Demir, I.**, 'EarthCube Charette: Building the Cyberinfrastructure to Better Understand Our Complex and Changing Planet', June 12-14, 2012, Arlington, VA, USA.
- [380] **Demir, I.**, 'EarthCube Community Workshop: Designing A Roadmap for Workflows in Geosciences', One-day Workshops, March 13 / April 13 / May 16 / Jun 5, 2012 [Workshops].
- [381] **Demir, I.**, 'Iowa Flood Information System', Hawkeye Caucus Day, Iowa State Capitol, March 27, 2012, Des Moines, IA, USA. [Live Demonstration]
- [382] **Demir, I.**, 'Iowa Flood Information System', Iowa Water Conference, Iowa State University, March 6-7, 2012, Ames, IA, USA. [Live Demonstration]
- [383] **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. [Presentation]

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- [384] **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. [Presentation]
- [385] **Demir, I.**, ‘Environmental Information Systems (GWIS and IFIS) and Scientific Visualization’, Turkish American Academics of Midwest (TAAM), May 21, 2011, Chicago IL, USA. [Presentation]
- [386] **Demir, I.**, ‘Environmental Information Systems (GWIS, GWP and IFIS) and Scientific Visualization’, Gebze Institute of Technology, April 28, 2011, Kocaeli, TURKEY. [Presentation]
- [387] **Demir, I.**, ‘Environmental Information Systems (GWIS and GWP) and Scientific Visualization’, Iowa Flood Center, IIHR – Hydraulics Engineering, University of Iowa, December 14, 2010, Iowa City, IA, USA. [Presentation]
- [388] **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. [Presentation]
- [389] **Demir, I.**, ‘Semantic Web and Environmental Information Systems’, *Department of Geography*, University of Georgia, October 28, 2009, Athens, GA, USA. [Invited Talk]
- [390] **Demir, I.**, ‘Popular Scientific Publishing’, *Second Annual Workshop for Young Scholars*, Southern Polytechnic State University, August 16, 2009, Atlanta, Georgia, USA. [Invited Talk]
- [391] **Demir, I.**, ‘GWIS: Georgia Watershed Information System’, *Second Annual Workshop for Young Scholars*, Southern Polytechnic State University, August 16, 2009, Atlanta, GA, USA. [Invited Talk]
- [392] **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. [Invited Talk]
- [393] **Demir, I.**, ‘GWIS: Georgia Watershed Information System’, *Center for Research in Water Resources*, University of Texas at Austin, May 8, 2009, Austin, TX, USA. [Invited Talk]
- [394] **Demir, I.**, ‘GWIS: Georgia Watershed Information System’, *Utah Water Research Laboratory*, Utah State University, May 6, 2009, Logan, Utah, USA. [Invited Talk]
- [395] **Demir, I.**, ‘GWIS: Georgia Watershed Information System’, *River Basin Center 2nd Friday Symposium*, University of Georgia, April 10, 2009, Athens, GA, USA. [Invited Talk]
- [396] **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. [Presentation]
- [397] **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. [Presentation]
- [398] **Demir, I.**, ‘Neural Network and Fuzzy Logic Applications in Environmental Science’, 2004, *Gebze Institute of Technology*, Kocaeli, TURKEY. [Presentation]
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GRANTS, RESEARCH FUNDING & ACADEMIC SUPPORT

Grant Contributions (funded – Role: PI/co-PI)

- [1] **Demir, I.** (co-PI), 'NSF Convergence Accelerator Track E: Linking the Green Economy to the Blue Economy at the Coast (Phase 2)', 2022-24. Source: NSF Convergence, Support: \$1.75M
- [2] **Demir, I.** (co-PI), 'Co-LEARN: A Midwestern Community of Learning for Empowerment, Climate Adaptation and Resilience for the Next Generation'. Source: *NOAA RISA*, 2022-27. Support: \$5M.
- [3] **Demir, I.** (PI), 'FloodRSS: Flood Resilience Support System for Participatory Community Action', 2022-23. Source: IWC, Support: \$25K
- [4] **Demir, I.** (PI), 'Watershed-Level Multi-Criteria Quantification of Agricultural Sustainability for Iowa'. Source: *UIOWA ISSFP*, 2022-23. Support: \$40K.
- [5] **Demir, I.** (PI), 'Actionable Flood Warnings Based on Ground-truth Data to Support Iowa DOT BridgeWatch Platform'. Source: *Iowa DOT*, 2022-23. Support: \$60K.
- [6] **Demir, I.** (PI), 'Information and Decision System for Poultry Infectious Diseases'. Source: *Iowa Poultry Association*, 2022-23. Support: \$25K.
- [7] **Demir, I.** (PI), 'Identification of Dominant Factors and Modeling Harmful Algal Bloom Dynamics for Major Lakes in Iowa'. Source: *Iowa Healthy Lakes Initiative*, 2022-23. Support: \$22K.
- [8] **Demir, I.** (PI), 'Extension for Big Sioux Flood Information System', 2022-23. Source: South Dakota DNR / RESPEC. Support: \$16K
- [9] **Demir, I.** (co-PI), 'E-Tailored Pain Management Support for Dementia Family Caregivers'. Source: *Alzheimer's Association*, 2022-24. Support: \$150K.
- [10] **Demir, I.** (co-PI), 'Cooperative Institute for Research to Operations in Hydrology (CIROH)'. Source: *NOAA Cooperative Institute*, 2022-27. Support: \$21M (Total Project Budget: \$360M)
- [11] **Demir, I.** (co-PI), 'HydroLang: An Open-Source Web-Based Programming Framework for Hydrological Community'. Source: *CUAHSI HIF*, 2022-23. Support: \$5K
- [12] **Demir, I.** (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', 2021-24. Source: NSF Hydrology, Support: \$403K
- [13] **Demir, I.** (PI), 'Maintenance and Support for Big Sioux Flood Information System', 2020-23. Source: South Dakota DNR / RESPEC. Support: \$65K
- [14] **Demir, I.** (co-PI), 'Disaster Route Planning for Floods'. Source: *MATC, US DOT*, 2022-23. Support: \$87K
- [15] **Demir, I.** (PI), 'AI-Enabled Intelligent Assistant (AIIA) for Personalized and Adaptive Learning and Advising'. Source: *UI ITTA*, 2022-23. Support: \$25K
- [16] **Demir, I.** (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

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- [17] **Demir, I.** (co-PI), 'GP-GO: Iowa Environmental Internship Pathways Program', 2021-24. Source: NSF IUSE:GEOPaths, Support: \$380K
- [18] **Demir, I.** (co-PI), 'Ashton Prairie Living Laboratory', 2021-22. Source: UI P3, Support: \$357K
- [19] **Demir, I.** (co-PI), 'Coupling Physical and Societal Objectives for Decision Making in Water Resources Management', 2021-22. Source: *IWC*. Support: \$5K
- [20] **Demir, I.** (co-PI), 'A Serious Game on Flood Mitigation for K-12 and Public Education', 2021-22. Source: *IWC*. Support: \$5K
- [21] **Demir, I.** (co-PI), 'Assessing the Flood Reduction Benefits of On-road Structures', 2021-24. Source: Iowa Department of Transportation, Support: \$450K
- [22] **Demir, I.** (co-PI), 'Data Anomaly Detection and Sediment Yield Estimation in the USACE's Reservoir Sedimentation Information (RSI) Database', 2020-22. Source: USACE, Support: \$50K
- [23] **Demir, I.** (co-PI), 'Evaluation of HAND Flood Inundation Maps in Iowa', 2020-21. Source: UCAR Comet Program, Support: \$15K
- [24] **Demir, I.** (collaborator), '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
- [25] **Demir, I.** (co-PI), 'Missouri River Flood Inundation Model and Information System', 2020-21. Source: Iowa Economic Development Authority, Support: \$800K
- [26] **Demir, I.** (co-PI), 'Enhancing Ethical Context in the Engineering Curriculum: Ethical Dilemmas in Building New Buildings Card Game', 2020-21. Source: COE Ethics, Support: \$5K
- [27] **Demir, I.** (PI), 'River Morphology Data and Analysis Tools (RiverMorph) – A web platform for enabling river morphology research', Source: NSF Geoinformatics, 2020-23. Support: \$504K
- [28] **Demir, I.** (co-PI), 'Design Guidelines and Mitigation Strategies for Reducing Sedimentation of Multi-Barrel Culverts', 2020-23. Source: US DOT, Support: \$270K
- [29] **Demir, I.** (co-PI), 'Next-Generation Stage Measurement at Ungauged Locations using IoT', 2020-21. Source: *IWC*. Support: \$5K
- [30] **Demir, I.** (PI), 'NVIDIA Deep Learning Institute Access - Teaching Kits', 2019-20. Source: NVIDIA. Support: \$18K (Teaching Kits x 200)
- [31] **Demir, I.** (co-PI), 'Semi-Volatile PCBs: Sources, Exposures, Toxicities', 2019-21. Source: US NIH. Support: \$1.1M
- [32] **Demir, I.** (PI), 'Spatial and Temporal Data Augmentation for Radar-Rainfall Products Using Deep Neural Networks'. Source: *NVIDIA Academic Partnership Program, NVIDIA Inc.*, 2019. Support: NVIDIA GPU Hardware (Supplementary Support - \$7K)
- [33] **Demir, I.** (co-PI), 'Critical Zone Observatory for Intensively Managed Landscapes (IML-CZO)'. Source: *NSF CZO*, 2019-20. Support: \$25K
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- [34] **Demir, I.** (PI), 'Inundation Damage Assessment Maps for Non-leveed Iowa Communities Mississippi River Front'. Source: *USACE*, 2019. Support: \$30K
- [35] **Demir, I.** (PI), 'Ethical and Moral Challenges for Engineers and AI: A Web-Based Serious Game for Engineering Decision Making'. Source: *CoE, UIOWA*, 2019-20. Support: \$20K
- [36] **Demir, I.** (PI), 'Quantum Computing Applications in Environmental Science'. Source: *Rigetti Quantum Cloud Services*, 2019. Support: \$5K
- [37] **Demir, I.** (co-PI), 'Connecting Rural and Peri-urban Farmers to Demonstrate and Disseminate Innovative Nutrient and Sediment Reduction Practices'. Source: *EPA*, 2019-2022. Support: \$1M
- [38] **Demir, I.** (PI), 'Framework: Software: Collaborative Research: CyberWater—An open and sustainable framework for diverse data and model integration with provenance and access to HPC'. Source: *NSF CSSI*, 2019-2022. Support: \$125K (Total Grant: \$1M)
- [39] **Demir, I.** (collaborator), '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 Research Award for Faculty, Support: \$10K
- [40] **Demir, I.** (PI), 'Water Quality Data Visualization'. Source: *UIOWA CHEEC*, 2018-2019. Support: \$38K
- [41] **Demir, I.** (PI), 'Improving Data Integration and Exchange for EPA Current Discovery Tool'. Source: *EPA*, 2018-2020. Support: \$192K
- [42] **Demir, I.** (PI), 'Integrated Data Framework for Agricultural Flood Damage and Loss Analysis'. Source: *NSF Big Data Hub – DigitalAg Spoke*, 2018-2019. Support: \$5K
- [43] **Demir, I.** (co-PI), 'An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin'. Source: *NSF Big Data Hub Spokes*, 2018-2021. Support: \$1M
- [44] **Demir, I.** (PI), 'Interactive Projector System for Collaborative Research, Communication and Outreach Activities'. Source: *UIOWA CEE Infrastructure Grant*, 2018-2019. Support: \$6.5K
- [45] **Demir, I.** (co-PI), 'Transfer of the Iowa DOT Culverts Web-Tool Prototype to Iowa DOT Mainframe'. Source: *Iowa DOT*, 2018-19. Support: \$75K
- [46] **Demir, I.** (PI), 'Data Visualization Project for Homeland Security'. Source: *Iowa Homeland Security*, 2017-18. Support: \$61K
- [47] **Demir, I.** (PI), 'Data Visualization of IWA Data and Project Sites'. Source: *Iowa Homeland Security*, 2017-21. Support: \$68K
- [48] **Demir, I.** (co-PI), 'Disaster Route Planning for Floods'. Source: *MATC, US DOT*, 2017-21. Support: \$325K
- [49] **Demir, I.** (co-PI), 'EAGER: PPER: Validation and Utilization of a New Tool for Citizen-Led Water Quality Monitoring in Agricultural Watersheds'. Source: *NSF*, 2017-18. Support: \$88K

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- [50] **Demir, I.** (PI), 'Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence'. Source: *AI for Earth, Microsoft & ESRI*, 2017-20. Support: \$20K (Credits for Cloud Services and ESRI Software)
- [51] **Demir, I.** (co-PI), 'Decision Support Tool for the Texas Multi-Hazard Tournament'. Source: *USACE*, 2017. Support: \$41K
- [52] **Demir, I.** (PI), 'GPGPU Techniques for Environmental Modeling Applications'. Source: *NVIDIA Academic Partnership Program, NVIDIA Inc.*, 2016. Support: NVIDIA GPU Hardware (Supplementary Support - \$3K)
- [53] **Demir, I.** (co-PI), 'Develop a Hydrologic and Hydraulic Model of the Big Sioux River Basin'. Source: South Dakota DNR, 2016-20. Support: \$190K
- [54] **Demir, I.** (PI), 'Interactive Web-based Digital Exhibit for Rainfall and Flood Data and Tools'. Source: UIOWA, 2016. Support: \$3K
- [55] **Demir, I.** (co-PI), 'Smart Ag-Practice Forecasting for Interconnected Communities: Supplemental request for BCS #1114978'. Source: National Science Foundation, 2016-2019. Support: \$1.2M
- [56] **Demir, I.** (co-PI), 'A Pilot Project for Cloud-based NEXRAD Data Processing, Analysis, and Visualization for Flood Forecasting and Water Resources Management'. Source: Unidata, 2016-17. Support: \$16K
- [57] **Demir, I.** (PI), 'UIOWA Midwest Hackathon'. Source: *NSF, MBDH, UIOWA & Industrial Partners*, 2016-2019.
- [58] **Demir, I.** (co-PI), 'Initial All-Hands Meeting in Digital Agriculture'. Source: *NSF, Midwest Big Data Hub*, 2016. Support: \$20K
- [59] **Demir, I.** (co-PI), 'Iowa Watershed Approach for Urban and Rural Resilience'. Source: *Iowa Economic Development Authority, U.S. Department of Housing and Urban Development*, 2016-2021. Support: \$6.5M
- [60] **Demir, I.** (PI), 'AWS Educate Program for Institutions'. Source: *Amazon*, 2015. Support: Amazon Cloud Resources for Education. Support: \$20K (credit)
- [61] **Demir, I.** (co-PI), 'Iowa Water Quality Information System'. Source: *Carver Foundation*, 2015-18. Support: \$453K
- [62] **Demir, I.** (co-PI), 'Prototype Multi-Jurisdictional Decision-Making Web Platform for Integrated Water Resources Management: From Interagency Collaboration to Implementation in Iowa-Cedar Watershed (Iowa)'. Source: US Department of Defense, Army Corps of Engineers, 2014-16. Support: \$180K
- [63] **Demir, I.** (PI), 'Web-based Augmented and Virtual Reality Flood Simulation Platform for Game-based Learning of Hydrological Concepts'. Source: ITS UIOWA – Game-based Learning Institute, 2014-15. Support: \$1K

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- [64] **Demir, I.** (PI), 'Improving Visualization and Access to Radar Data using Unidata Tools for Flood Prediction and Management'. Source: Unidata Equipment Awards Program, 2014-15. Support: \$11K
- [65] **Demir, I.** (co-PI), 'Exploring Cloud Computing Capabilities for Iowa Flood Information System'. Source: *Amazon Web Services in Education Grant*, 2013-14. Support: \$30K (credit)
- [66] **Demir, I.** (PI), 'Collaboration with Scientific Visualization Studio (SVS) at Goddard Space Flight Center'. Source: *NASA EPSCoR Program*, 2013. Support: \$3K
- [67] **Demir, I.** (PI), 'Web-based Augmented and Virtual Reality Flood Simulation Platform for Game-based Learning of Hydrological Concepts'. Source: *Academic Technologies Advisory Council, University of Iowa*, 2013-14. Support: \$12K
- [68] **Demir, I.** (PI), 'Design and Development of GPU-based Information Visualization Interfaces for Hydrological and Meteorological Data'. Source: *NVIDIA Academic Partnership Program, NVIDIA Inc.*, 2013. Support: NVIDIA GPU Hardware (Supplementary Support - \$5K)
- [69] **Demir, I.** (PI), 'Google Maps Engine Public Data Program'. Source: Google, 2013. Support: \$5K (Google Maps Engine Credit)
- [70] **Demir, I.** (PI), 'National Flood Information System'. Source: Google, 2013. Support: \$4K (Google Compute Engine for Research Computing)
- [71] **Demir, I.** (PI), 'FloodCube: National Flood Information System'. Source: US Ignite / Mozilla - Gigabit Explorer Challenge, 2013. Support: \$5K (Travel and Research Computing)
- [72] **Demir, I.** (PI), 'Design and Development of Open Source Programming Projects for the Iowa Flood Center, University of Iowa'. Source: Google Summer of Code, 2013. Support: \$18K
- [73] **Demir, I.** (PI), 'Design and Development of UCF CHAMPS Hydrologic Information System'. Source: University of Central Florida, 2013. Support: \$16K
- [74] **Demir, I.** (PI), 'Design and Development of GPU-based Information Visualization Interfaces for Hydrological and Meteorological Data'. Source: *NVIDIA Academic Partnership Program, NVIDIA Inc.*, 2013. Support: NVIDIA GPU Hardware (\$10K)
- [75] **Demir, I.** (PI), 'Design and Development of BlackBerry Smartphone and Tablet Applications'. Source: *BlackBerry Academic Program*, 2012. Support: BlackBerry Hardware Support (\$7K).
- [76] **Demir, I.** (co-Chair), 'EarthCube Community Workshop: Designing A Roadmap for Workflows in Geosciences'. Source: *NSF – EarthCube*, 2012. Support: \$100K.
- [77] **Demir, I.** (co-PI), 'Global Water Platform – Phase IA: Planning, Design and Development of A Web-Based Platform on Water and Sustainability Issues'. Source: *International Water Association*, 2009. Support: \$50K.
- [78] **Demir, I.** (PI), Companies and organizations providing in-kind support for research (hardware, software, and services): Google (App Engine, Compute Engine, Map Engine), Microsoft, Amazon, NVidia, Leap Motion, BlackBerry, Mozilla Foundation, GitHub, GenMyModel.
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Grant Contributions (funded – Role: senior personnel)

- [79] **Demir, I.** (Senior Personnel), ‘Iowa Flood Center’. Source: *State of Iowa*. 2011-16. Support: \$188K (Project budget: \$1.5M/annual renewal).
- [80] **Demir, I.** (Senior Personnel), ‘Iowa Floodplain Mapping Program’. Source: *Iowa Department of Natural Resources*. 2011-16. Support: \$185K (Project budget: \$10M).

CREATIVE ENVIRONMENTAL AND INFORMATION SCIENCE WORKS

Information Systems and Web Platforms

- 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
- 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	<i>Turkey Flood Information System (TABIS)</i> Planning, design and implementation of a web-based information system on flood related data, information and visualizations
2013-2015	<i>NASA IFLOODS Information System</i> Planning, design and implementation of a web-based information system on data, information and visualizations of NASA GPM satellite mission experiment
2012-2013	<i>UCF CHAMPS Hydrologic Information System</i> Planning, design and implementation of a web-based information system on coastal inundation and modeling data, information and visualizations
2012-2013	<i>Field Campaign Management System - NASA IFLOODS Project</i> 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	<i>Fund-A-Sensor Initiative</i> A crowd-funding initiative for getting support to develop and deploy new stream sensors for improving flood monitoring in Iowa
2011-2016	<i>IFIS Knowledge Engine & Smart Assistant</i> Intelligent knowledge generation system supported with ontology, relational database queries, real-time data, hydrological models, and scientific visualizations
2010-present	<i>Iowa Flood Information System – IFIS</i> Planning, design and implementation of a web-based information system on flood related data, information and visualizations
2009-2012	<i>Global Water Platform – GWP</i> Planning, design and implementation of a web-based platform on water
2007-2010	<i>Georgia Watershed Information System – GWIS</i> A prototype of an information system for Georgia watersheds
2006-2011	<i>Toxus: Scientific Collaboration and Research Platform</i> Academic Research Group & Project Management System
2000	<i>B2B (Business to Business) Portal</i> 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
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- 2003 *Izmit Bay Technological Forecast Project*, Environmental Group, Kocaeli Industry, Istanbul, TURKEY, Mathematical and Computational Modeling Responsibility
Sponsor: Kocaeli Industry Association, Kocaeli, TURKEY
- 2002-2004 *Environmental Impact Assessment Projects*
Company: Procter & Gamble and 7 other companies from various industries, TURKEY
- 2002 *Wastewater Treatment Plant Design*, Aydın, TURKEY
 Term Project, Gebze Institute of Technology, Kocaeli, TURKEY

Web-based Tools and Mobile Applications

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

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- 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 Toxusus) 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

- 2013-2016 Annual workshop website on 'Grand Challenges in Engineering and Applied Sciences'
- 2010 Bosphorus Environmental Inc., Environmental Research, Development and Consulting
- 2010 Southeast Water Resources Collaboratory (SEWRC)
- 2008-2009 Annual workshop website on 'Annual Workshop for Young Scholars'
- 2009 The Institute of Academic Advancement, a non-profit institution for higher education
- 2003 Environmental Pollution Priorities Symposium IV, Gebze Institute of Technology
- 2002-2004 Gebze Institute of Technology, Environmental Engineering Department
- 1999-present Designed more than hundreds of professional, academic and personal websites for companies and organization from various academic and industrial institutions

AWARDS & RECOGNITION

- 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)*

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- 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 (SDES)
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

Early-Career Travel Awards

- 2017 NSF Midwest Big Data Hub All-Hands Meeting, October 2-3, 2017, Omaha, NE, USA.
- 2017 NSF National Workshop on Developing a Research Agenda for Connected Rural Communities (CRC17), September 7-8, 2017, Charlottesville, VA, USA.
- 2017 CUAHSI Conference on Hydroinformatics, July 25-27, 2017, Tuscaloosa, AL, USA.
- 2016 National Water Center Summer Institute, June 6-17, 2016, Tuscaloosa, AL, USA.
- 2016 NSF MBDH Digital Agriculture All-Hands Meeting, May 16-17, 2016, Ames, IA, USA.
- 2016 NSF Midwest Big Data Hub All-Hands Meeting, March 21-22, 2016, Chicago, IL, USA.
- 2015 NSF Workshop on Applications and Services in the Year 2021
- 2015 NSF EarthCube OntoSoft Project Meeting
- 2015 NSF EarthCube All-Hands Meeting
- 2015 NSF EarthCube Tech-Hands Meeting
- 2013 17th GENI Engineering Conference (GEC17), Madison, WI, USA
- 2013 US Ignite – Next Generation Application Summit, Chicago, IL, USA
- 2011 CUAHSI Conference on Hydrologic Data and Inf. Systems, June 22-24, 2011, Logan, UT, USA.
- 2009 SOFOR GIS Conference, Student Volunteer

2009 Graduate School Student Travel Grant, University of Georgia

Media Coverage and Interviews

- [1] **Interview:** Project: 'Flood Mitigation Ethical Decision Support Framework'
Natasha Keicher, Daily Iowan, December 7, 2021
- [2] **Interview:** Project: 'Database highlights contaminants in private wells'
Julia Shanahan, Daily Iowan, July 16, 2019
- [3] **Interview:** Project: 'New Homeland Security report on new technologies for alerting public'
Erin Jordan, The Gazette, December 18, 2018
- [4] **Interview:** Project: 'University of Iowa Hackathon Competition'
Julia F. DiGiacomo, The Gazette, October 5, 2018
- [5] **Interview:** Project: 'An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin'
Erin Jordan, The Gazette, July 18, 2018
- [6] **Interview:** 'Iowa Flood Information System – flood damage estimate feature'
Kayla James, CBS2/FOX28 News, May 1, 2018
- [7] **Interview:** 'Iowa Flood Information System'
Kate Hayden, Business Record, innovationIOWA Magazine, April 16, 2018
- [8] **Interview:** Project: 'Flood AI: Artificial Intelligence System for Flooding'
Todd T. De Voe, EM Weekly, March 2, 2018
- [9] **Interview:** Project: 'Flood AI: Artificial Intelligence System for Flooding'
Skip Descant, GovTech Magazine, January 10, 2018
- [10] **Highlight:** Project: 'Flood AI: Artificial Intelligence System for Flooding'
Daily Iowan, KCRG-TV9, Business Record, GovTech Magazine, IFC, IHR News, COE News, Iowa Now, and more...
- [11] **Interview:** 'New app uses artificial intelligence to give people real live flood data'
Ethan Fickau, KCRG-TV9, Dec 19, 2017
- [12] **Interview:** 'UI professor develops a Siri for flood information'
Sarah Watson, Daily Iowan, Nov 29, 2017
- [13] **NSF Highlight:** 'EarthCube 2015 Highlights: Faces of EarthCube – Ibrahim Demir, Informatics'
NSF EarthCube, All Hands Meeting, May 27, 2015
- [14] **Interview:** 'Iowa Flood Information System displayed at capitol today'
O. Kay Henderson, Radio Iowa, March 10, 2015
- [15] **Interview:** 'A Model for Turkey: Early Warning System for Flooding' – (6-page)
Turkish National Science Foundation – Science and Technology Magazine, September 2014
- [16] **Interview:** 'University of Iowa: Turning a flood of data into flood safety'
BlackBerry Academic Spotlight, May 2013

- [17] **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...
- [18] **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
- [19] **Highlight:** Project: 'National Flood Information System (FloodCube)'
NSF Press Release, Cisco Network News, NYC Media Lab Report
- [20] **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
- [21] **Highlight:** Project: 'Fund-a-Sensor Initiative'
ND Stem Network, UI Foundation Press Release, Press Citizen, IowaNow, IIHR News
- [22] **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

PROFESSIONAL ACTIVITIES

University Service

2021-present	Member, IGPI Graduate Studies Committee, University of Iowa
2020-present	Chair, Engineering Technology Council (ETC), University of Iowa
2020-present	Member, CEE DEI Action Committee, University of Iowa
2020	Explore Engineering@Iowa, University of Iowa, February 1, 2020, Iowa City, IA, USA
2018-present	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

Organization Boards & Committees

2021-present	Member, Technical Advisory Team, Texas Integrated Flood Framework Initiative
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2020-2022	Member, Board of Directors, Int. Environmental Modelling & Software Society
2020-present	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-present	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-present	Vice-Chair, Leadership Team, International Joint Committee on Hydroinformatics (IAHR/IWA/IAHS)
2015-present	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

2022	Stream Leader, <i>2022 iEMSs Biennial Meeting</i> , July 4-8, 2022, Brussels, Belgium.
2022	International Scientific Committee, <i>14th International Conference on Hydroinformatics IIC 2022 – Water INFLUENCE</i> , July 4-8, 2022, Bucharest, Romania.
2021	Session Organizer, <i>Frontiers in Hydrology Meeting by AGU and CUAHSI</i> , June 19-24, 2022, San Juan, Puerto Rico
2022	Session Organizer, <i>IAHR World Congress 2022 - From Snow to Sea</i> , June 19-24, 2022, Granada, SPAIN.
2022	Scientific Committee, <i>IAHR World Congress 2022 - From Snow to Sea</i> , June 19-24, 2022, Granada, SPAIN.
2021	Scientific Committee, <i>ICWRER 2022 - 9TH International Conference on Water Resources and Environment Research</i> , April 25-27, 2022, Orlando, FL, USA
2021	Session Organizer, <i>ICWRER 2022 - 9TH International Conference on Water Resources and Environment Research</i> , April 25-27, 2022, Orlando, FL, USA

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- 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
- 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.

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- 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.
- 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.
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- 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
- 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

Developer Programs & Services

- 2019-present Member, Microsoft XR Developer Program
- 2016-present Member, ESRI Community Maps Program
- 2016-present Member, NVIDIA GPU Educators Program
- 2013-present Member, Microsoft App Builder Program
- 2013-2018 Member, MYO Armband Developer Program, Gesture-based Control Device
- 2013-present Member, InnoCentive Challenge Program, Crowdsourcing innovation problems
- 2013-present Member, Samsung Indie App Developer Program, Mobile application development
- 2012-present Researcher Member, Elsevier Innovation Explorers Program
- 2012-present Member, Google Engage, Search Engine Optimization and Web Marketing Program
- 2012-2017 Member, BlackBerry Developer Program, Smartphone and Tablet App Development
- 2011-present Member, Apple Developer Program, iOS and Safari App Development

Grant/Award Review Panels

- Proposal Review Panel, NSF LEAP HI Program, 2022
- Proposal Review, Israel Ministry of Innovation, Science and Technology, 2022
- Proposal Review, Gulf of Mexico Alliance, 2022
- Proposal Review, Hatch Project, USDA-NIFA, 2022
- Proposal Review, NSF Geoinformatics Program, 2021
- Proposal Review, Austrian Federal Ministry of Education, Science and Research, 2021
- Book Proposal Review, Geological Society of America, 2021
- Internal Review Panel, NSF Science and Technology Center, 2019
- Book Proposal Review, Taylor and Francis, 2019
- Proposal Review Panel, Iowa Academy of Science, 2019
- Proposal Review Panel, CUAHSI Hydroinformatics Innovation Fellowship, 2018, 2019, 2020
- Proposal Review Panel, CGRER Seed Grant, 2018, 2020
- Proposal Review Panel, Natural Environment Research Council, UK, 2020

- Proposal Review Panel, Oak Ridge Associated Universities (ORAU), 2017
- Proposal Review Panel, Graduate Research Fellowship Program (GRFP), NSF, 2017
- Proposal Review Panel, Graduate Fellowship Program, NASA - Iowa Space Grant Consortium, 2016
- Review Panel, Staff Excellence Awards, College of Engineering, University of Iowa, 2016
- Review Panel, Summer Institute Awards, NFIE, National Water Center, 2016
- Proposal Review Panel, Unidata Community Equipment Awards, UCAR, 2015

Editorial Board for Journals

- Associate Editor, Water and Artificial Intelligence, *Frontiers in Water*, 2022-present
- Associate Editor, *Journal of Environmental Informatics*, 2020-present
- Associate Editor, *Smart Water*, Springer, 2018-present
- Associate Editor, *Journal of Hydroinformatics*, IWA, 2017-present
- Associate Editor, *Environmental Modeling and Software*, Elsevier, 2015-present
- Associate Editor, *A. Journal of Geosciences*, Springer, 2017-2019

Guest Editorial for Journals

- 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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| ▪ <i>Advances in Water Resources</i> , Elsevier | ▪ <i>Int. Journal of River Basin Man.</i> , Taylor & Francis |
| ▪ <i>Applied Water Science</i> , Springer | ▪ <i>Journal of American Water Res. Assoc.</i> , Wiley |
| ▪ <i>Bulletin of American Meteorological Soc.</i> , AMS | ▪ <i>J. of Applied Water Eng. & Res.</i> , Taylor & Francis |
| ▪ <i>CLEAN – Soil, Air, Water</i> , Wiley | ▪ <i>Journal of Atmospheric and Oceanic Tech.</i> , AMS |
| ▪ <i>Computer-Aided Civil and Infra. Eng.</i> , Wiley | ▪ <i>Journal of Computing in Civil Engineering</i> , ASCE |
| ▪ <i>Computers</i> , MDPI | ▪ <i>Journal of Environmental Management</i> , Elsevier |
| ▪ <i>Computers & Geosciences</i> , Elsevier | ▪ <i>Journal of Flood Risk Management</i> , Wiley |
| ▪ <i>Computers & Graphics</i> , Elsevier | ▪ <i>Journal of Hydroinformatics</i> , IWA |
| ▪ <i>Computers & Industrial Engineering</i> , Elsevier | ▪ <i>Journal of Hydrologic Engineering</i> , ASCE |
| ▪ <i>Ecological Economics</i> , Elsevier | ▪ <i>Journal of Hydrology</i> , Elsevier |
| ▪ <i>Ecological Informatics</i> , Elsevier | ▪ <i>Journal of Hydrology – Regional Studies</i> , Elsevier |
| ▪ <i>Earth and Space Science</i> , AGU | ▪ <i>Journal of Hydrometeorology</i> , AMS |
| ▪ <i>Earth Science Informatics</i> , Springer | ▪ <i>J. of Inf. & Telecommunication</i> , Taylor & Francis |
| ▪ <i>Environmental Challenges</i> , Elsevier | ▪ <i>Journal of Membrane Science</i> , Elsevier |
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- Env. Eng. and Management Journal, IASI
- Env. Modeling and Software, Elsevier
- Env. Monitoring and Assessment, Springer
- Environment, Systems and Decisions, Springer
- Frontiers of Env. Sci. & Eng. in China, Springer
- Geomatics, Natural Hazards and Risk, Taylor & Francis
- Geophysical Research Letters, Wiley
- 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
- J. of Struc. Integrity and Main., Taylor & Francis
- Journal of Visualized Experiments, JoVE
- Journal of Selected Topics in Applied Earth Observations and Remote Sensing, IEEE
- Natural Hazards, Springer
- Natural Hazards and Earth System Sci., EGU
- Ocean & Coastal Management, Elsevier
- Pedosphere, Elsevier
- PLOS One, PLOS
- 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, 2020, 2021, 2022
- Georgia Junior Science & Humanities Symposium, 2010, 2011, Athens, GA, USA
- GIS Day at Kansas University, 2019, Lawrence, KS, USA
- IAHR World Congress, 2019, 2022.
- IAHR YPN Congress, 2020, 2021, 2022.
- Idea Storm Competition, JPEC, University of Iowa, 2021
- International Conference on Flood Management - ICFM, 2021, Iowa City, IA, USA
- International Congress on Environmental Modelling and Software (iEMSs), 2014, 2018, USA
- 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
- Singapore International Water Week 2020 - Water Convention, 2020
- IWA World Water Congress & Exhibition, IWA, 2010, 2011, 2012, 2014, 2020

Professional Society Memberships

- AAAS – The American Association for the Advancement of Science
- AGU – American Geophysical Union
- AMS – American Meteorological Society
- GSA – The Geological Society of America
- IAHR – International Association for Hydro-Environment Engineering and Research
- IAHS – International Association of Hydrological

- ASEE – The American Society for Engineering Education
 - ASCE – American Society of Civil Engineers
 - ASFPM – The Association of State Floodplain Managers
 - EGU – European Geosciences Union
 - EWRI – Environmental & Water Resources Institute
- Sciences
 - IAS – Iowa Academy of Science
 - iEMSs – The International Environmental Modelling & Software Society
 - IFSA – International Fuzzy Systems Association
 - IWA – International Water Association
 - Sigma Xi – The Scientific Research Society
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