

# IBRAHIM DEMIR

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ASSISTANT PROFESSOR, CEE, ECE, UI3

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## CONTACT INFORMATION

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## RESEARCH INTERESTS AND EXPERIENCE

- › Hydroinformatics, environmental informatics, database, and data management systems
- › Information and intelligent systems, internet and web technologies in environmental engineering
- › Scientific visualization, information communication and visual data analytics applications
- › High-performance computing, GPU-based visualization, and scientific software development
- › Neural networks, fuzzy logic, and genetic algorithms applications in environmental science
- › 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

## RESEARCH EXPERIENCE & APPOINTMENTS

2016-present **Assistant Professor** -- *main appointment – tenure track*  
Department of Civil and Environmental Engineering, University of Iowa

2016-present **Assistant Professor** -- *secondary appointment – tenure track*

\* Updated on April 2020

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|--------------|---|
|              | Department of Electrical and Computer Engineering, University of Iowa   |
| 2016-present | <b>Associate Research Professor (Faculty Engineer) – research faculty track</b><br>IIHR-Hydroscience & Engineering, Iowa Flood Center, University of Iowa |
| 2018-present | <b>Faculty Affiliate</b><br>Mid-America Transportation Center, US DOT   |
| 2016-present | <b>Informatics Cluster Faculty – cluster joint hire</b><br>The Iowa Informatics Initiative, University of Iowa  |
| 2016-present | <b>Faculty Affiliate</b><br>Early Career Faculty Academy, Center for Teaching, ITS, University of Iowa  |
| 2015-2016    | <b>Adjunct Assistant Professor</b><br>Department of Electrical and Computer Engineering, University of Iowa   |
| 2015-present | <b>Faculty Affiliate</b><br>Interdisciplinary Graduate Program in Informatics<br>Geoinformatics and Information Science Tracks, University of Iowa        |
| 2014-2016    | <b>Faculty Affiliate</b><br>Game-Based Learning Faculty Institute, Center for Teaching, ITS, University of Iowa   |
| 2013-present | <b>Faculty Affiliate</b><br>Center for Global & Regional Environmental Research (CGRER), University of Iowa   |
| 2012-2016    | <b>Adjunct Assistant Professor</b><br>Department of Civil and Environmental Engineering, University of Iowa   |
| 2011-present | <b>Faculty Affiliate</b><br>Iowa Flood Center (IFC), University of Iowa   |
| 2011-2016    | <b>Assistant Research Professor (Faculty Engineer) – research track</b><br>IIHR-Hydroscience & Engineering, University of Iowa                            |
| 2010-2011    | <b>Postdoctoral Research Scholar</b><br>Iowa Flood Center, IIHR-Hydroscience & Engineering, University of Iowa  |
| 2010 May-Nov | <b>Postdoctoral Research Associate</b><br>Environmental Informatics and Control Program, University of Georgia  |
| 2005-2010    | <b>Graduate Assistant</b><br>Environmental Informatics and Control Program, University of Georgia   |
| 2002-2004    | <b>Research Assistant</b><br>Department of Environmental Engineering, Gebze Institute of Technology, TURKEY   |
| 1999-2000    | <b>B.S. Graduation Project</b> , Computational Chemistry<br>Bogazici (Bosporus) University, Istanbul, TURKEY  |

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## TEACHING EXPERIENCE & EDUCATIONAL SERVICES

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| 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   |
| 2019 Spring | Informatics for Sustainable Systems, CEE:5310 (IGPI:5311)  |
| 2018 Fall   | Engineering Problem Solving I, ENGR:1100   |
| 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<br>Densified Monitoring and Data Integration for Hydrological Datasets   |
| 2013 Summer | Mentoring & Project Advisor, Google Summer of Code Program<br>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)<br>Cross-listed as GEOG:5129, ME:5129, IE:5129, CEE:5129, ECE:5129.   |
| 2013 Fall   | Project Advisor – Class Term Project<br>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<br>University of Georgia, Athens, GA, USA (with Drs. Walker and Beck)  |
| 2002-2004   | <b>Teaching Assistant</b> , Gebze Institute of Technology, Kocaeli, TURKEY<br>Teaching special topics related with my research, tutoring, holding office hours, grading homework and exams, and holding problem solving sessions<br><b>Courses:</b><br>CMB553 - Optimization Techniques in Environmental Sciences<br>CMB650 - Mathematical Modeling in Environmental Sciences<br>CMB554 - Water Quality Management<br>CMB406 - Introduction to Environmental Engineering I (Water Quality) |

## 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

### Book Chapters

- [3] Section on 'Cyberinfrastructure Systems for Flood Preparedness and Response', for "Oxford Research Encyclopedia of Natural Hazard Science", Oxford University Press. Edited by Susan L. Cutter *et al.*, 2020. (*in preparation*)
- [4] 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", Taylor & Francis. Edited by L. Daniela *et al.*, 2020. (*in press*)
- [5] Chapter on 'Hydroinformatics for River Processes', Book: "Experimental Hydraulics: Flows, Methods, Instrumentation, Data Analysis & Management", CRC Press, Taylor & Francis. Edited by M. Muste *et al.*, 2017.

### Patents

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

### Peer Reviewed Journal Articles

- [7] Demiray, B.Z., Sit, M. and Demir, I., 'D-SRGAN: DEM Super-Resolution with Generative Adversarial Network', SN Computer Science - arXiv:2004.04788 [cs.CV], 2020. (in review)
- [8] Gautam, A., Sit, M.A., **Demir, I.**, 'Realistic River Image Synthesis using Deep Generative Adversarial Networks', arXiv:2003.00826 [cs.CV] - *EarthArxiv*, 10.31223/osf.io/n5b7h, 2020.
- [9] 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*, 2020. (in review)
- [10] Sermet, Y., **Demir, I.**, Muste, M., 'A Serious Gaming Framework for Decision Support on Hydrological Hazards', *Science of The Total Environment*, 2020. (in press)
- [11] Xiang, Z., Yan, J., **Demir, I.**, 'A Rainfall-Runoff Model with LSTM-based Sequence-to-Sequence Learning', *Water Resources Research*, 56 (1), 2020.

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- [12] 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.
- [13] 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.
- [14] 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.
- [15] Sermet, Y., **Demir, I.**, 'Towards an Information Centric Flood Ontology for Information Management and Communication', *Earth Science Informatics*, 12 (4), 541-551, 2019.
- [16] 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.
- [17] 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.
- [18] Yildirim, E., **Demir, I.**, 'An Integrated Web Framework for HAZUS-MH Flood Loss Estimation Analysis', *Natural Hazards*, 99:1, 275-286, 2019.
- [19] 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.
- [20] Sermet, Y., **Demir, I.**, 'A Generalized Web Component for Domain-Independent Smart Assistants', *arXiv:1909.02507 [cs.HC]*, 2019. (pre-print)
- [21] 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.
- [22] 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.
- [23] Sit, M.A., **Demir, I.**, 'Decentralized Flood Forecasting Using Deep Neural Networks', *EarthArXiv - arXiv:1902.02308 [cs.LG] - doi:10.31223/osf.io/e9xqr*, 2019. (pre-print)
- [24] Sermet, Y., **Demir, I.**, 'An Intelligent System on Knowledge Generation and Communication for Flooding', *Environmental Modeling and Software*, 108, 51-60, 2018.
- [25] 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.

- [26] 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.
- [27] 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.
- [28] **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.
- [29] **Demir, I.**, Szczepanek, R., 'Optimization of River Network Representation Data Models for Web-based Systems', *Earth and Space Science*, Volume 4, Issue 6, 2017.
- [30] 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]
- [31] 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.
- [32] **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.
- [33] **Demir, I.**, Krajewski, W., 'Towards an integrated Flood Information System: Centralized data access, analysis, and visualization', *Environmental Modeling and Software*, 50, 77-84, 2013.
- [34] 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.
- [35] 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.
- [36] Aydiner, C., **Demir, I.**, Keskinler, B., and Ince, O., 'Joint Analysis of Transient Flux Behaviors via Membrane Fouling in Hybrid PAC/MF Processes using Neural Network', *Desalination*, 250, 1, 188-196, 2010.
- [37] Sunlu, F.S., **Demir, I.**, Onkal-Engin, G., Büyükişik, B., Sunlu, U., Koray, T., and Kükrer, S., 'Nanoplankton Population Dynamics and Dissolved Oxygen Change across The Bay of Izmir by Neural Networks', *Journal of Environmental Monitoring*, 11, 6, 1165-1168, 2009.

- [38] Bayar S., **Demir, I.**, and Onkal-Engin, G., 'Modeling Leaching Behavior of Solidified Wastes Using Back-Propagation Neural Networks', *Ecotoxicology and Environmental Safety*, 72, 3, 843–850, 2009.
- [39] Onkal-Engin, G., and **Demir, I.**, 'Cost Analysis of Alternative Methods for Wastewater Handling in Small Communities', *Journal of Environmental Management*, 79, 4, 357-363, 2006.
- [40] Onkal-Engin, G., **Demir, I.**, and Engin, S. N., 'e-NOSE Response Classification of Sewage Odors by Neural Networks and Fuzzy Clustering', *Advances in Natural Computation*, Pt 2, Proceedings Lecture Notes In Computer Science, 3611, 648-651, 2005. [main author – publication from M.S. thesis – in conjunction with a conference proceeding]
- [41] Onkal-Engin, G., **Demir, I.**, and Engin, S. N., 'Determination of the Relationship between Sewage Odor and BOD by Neural Networks', *Environmental Modeling & Software*, 20, 7, 843-850, 2005. [main author – publication from M.S. thesis]
- [42] Aydiner, C., **Demir, I.**, and Yildiz, E., 'Modeling of Flux Decline in Crossflow Microfiltration Using Neural Networks: The Case of Phosphate Removal', *Journal of Membrane Science*, 248, 1-2, 53-62, 2005.
- [43] Onkal-Engin, G., **Demir, I.** and Hiz, H., 'Assessment of Urban Air Quality in Istanbul using Fuzzy Synthetic Evaluation', *Atmospheric Environment*, 38, 23, 3809-3815, 2004. [main author – publication from M.S. thesis]

#### Peer Reviewed Conference Papers

- [44] Mount, J., Alabbad, Y., **Demir, I.**, 'Towards an Integrated and Realtime Wayfinding Framework for Flood Events', *2nd ACM SIGSPATIAL International Workshop on Advances in Resilient and Intelligent Cities (ARIC 2019)*, November 5, 2019, Chicago, Illinois, USA.
- [45] Sermet, Y., **Demir, I.**, Kucuksari, S., 'Overhead Power Line Sag Monitoring through Augmented Reality', *IEEE 2018 North American Power Symposium*, September 9-11, 2018, Fargo, ND.
- [46] Sermet, Y., **Demir, I.**, 'Flood Action VR: A Virtual Reality Framework for Disaster Awareness and Emergency Response Training', *15th International Conference on Modeling, Simulation and Visualization Methods (MSV'18)*, July 30-August 2, 2018, Las Vegas, NV.
- [47] Ebert-Uphoff, I., Thompson, D.R., **Demir, I.**, Gel, Y.R., Hill, M., Karpatne, A., Guereque, M., Kumar, V., Cabral-Cano, E., Smyth, P., 'A Vision for the Development of Benchmarks to Bridge Geoscience and Data Science', *Proceedings of the Seventh International Workshop on Climate Informatics (CI 2017)*, NCAR Technical Note NCAR/TN-536+PROC, September 2022, 2017, Boulder, CO.
- [48] Xu, H. Hameed, H., Windsor, M., Muste, M., **Demir, I.**, Smith, J., Hunemuller, T., Stevenson, M. B., 'Decision-Support System for Collaborative Planning on Multi-Hazard Mitigation', *37th IAHR World Congress*, August 13-18, 2017, Kuala Lumpur, Malaysia.

- [49] **Demir, I.**, 'Interactive Web-based Hydrological Simulation System as an Education Platform using Augmented and Immersive Reality', *ASEE North Midwest Section Meeting*, October 16-18, 2014, Iowa City, IA, USA.
- [50] Haltas, I., **Demir, I.**, 'Toward a Flood Information System (TABİS) for Turkey', *HIC 2014 – 11th International Conference on Hydroinformatics*, August 17-21, 2014, New York, NY, USA.
- [51] **Demir, I.**, Small, S., Goska, R., Keahey, K., Armstrong, P., Riteau, P., Seo, B., Mantilla, R., Krajewski, W., 'Data Integration, Modeling and Information Communication for Flood Risk Mitigation using Cloud Computing', *8th International Congress on Environmental Modelling and Software (iEMSs)*, June 15-19, 2014, San Diego, CA, USA.
- [52] Beck, M. B., Walker, R. V., Jiang, F., **Demir, I.**, and Hall, J. W., 'Re-Engineering Cities as Forces for Good in the Environment: Paths of Transition to Distant Future Alternatives', Paper # 3078, *in Proceedings of World Water Congress and Exhibition*, September 19–24, 2010, Montréal, Canada.
- [53] **Demir, I.**, Jiang, F., Walker, R. V., Parker, A. K., and Beck, M. B., 'Information Systems and Social Legitimacy: Scientific Visualization of Water Quality', *in Proceedings of IEEE Int. Conference on Systems, Man, and Cybernetics*, p1093-1098, October 11-14, 2009, San Antonio, TX, USA.
- [54] **Demir, I.**, and Beck, M. B., 'GWIS: A Prototype Information System for Georgia Watersheds', Paper 6.6.4, *in Proceedings of Georgia Water Resources Conference: Regional Water Management Opportunities*, April 27-29, 2009, UGA, Athens, GA, USA.
- [55] Sunlu, F., **Demir, I.**, Onkal-Engin, G., Sunlu, U., Buyukisik, B., Koray, T., Sever, T., Kukrer, S., and Aydin, A., 'Prediction of Nano-plankton Change in Izmir Bay (Aegean Sea - TURKEY) with Time by Neural Networks', *Rapp. Comm. Int. Mer. Médit.*, 38, *38th CIESM Congress*, 9-13 April 2007, Istanbul, TURKEY.
- [56] Onkal-Engin, G., **Demir, I.**, and Engin, S. N., 'e-Nose Response Classification of Sewage Odours by Neural Networks and Fuzzy Clustering', *First International Conference on Natural Computation (ICNC'05)*, 27 - 29 August 2005, Changsha, China. [*main author – publication from M.S. thesis*]
- [57] Karpuzcu, M., Onkal-Engin, G., and **Demir, I.**, 'Alternative Approaches for Wastewater Treatment and Disposal in Developing Countries', *5th Specialized Conference on Small Water and Wastewater Treatment Systems*, 24-26 September 2002, Vol. I, 187-194, Istanbul, TURKEY.

### Other Publications & Reports

- [58] Workshop Report, Convergence Accelerator (CA) - Open Knowledge Network (OKN) EarthCube Workshop, ESIP 2020 Winter Meeting, January 6, 2020, North Bethesda, MD.
- [59] Workshop Report, National Workshop on Developing a Research Agenda for Connected Rural Communities (CR17), September 7-8, 2017, Charlottesville, VA.
- [60] Muste, M., **Demir, I.**, Smith, J.T., Hunemuller, T. and Stevenson, M.B., 2017. 'Prototype Multi-Jurisdictional Decision-Making Web Platform for Integrated Water Resources Management: From Interagency Collaboration to Implementation in the Iowa-Cedar Watershed', Report G15AP0041, USGS & Institute of Water Resources, US Army Corps of Engineers, Baltimore, MD.



- [61] **Demir, I.**, Yildirim, E., 'HAZUS Flood Loss and Damage Estimation on the Web', *HAZUS HotZone Newsletter*, September Issue, September 2017.
- [62] Muste, M., **Demir, I.**, 'Serious Gaming for Community Engagement in Multi-Hazard Mitigation', *HydroLink, IAHR*, Issue 1, 2017.
- [63] **Demir, I.**, Krajewski, W.F., 'A Novel Cyberinfrastructure System for Integrated Data Collection, Dissemination and Sharing via Web Technologies', *The NHWC Transmission, The National Hydrologic Warning Council (NHWC)*, October Issue, 2015.
- [64] **Demir, I.** (as contributor), Submitted by Technology and Architecture Committee, 'EarthCube Strategic Technology Plan', *NSF EarthCube*, August 31, 2015.
- [65] Richard, S., **Demir, I.**, Arko, A., Fils, D., 'Standards and Standards Bodies Working Group Proposal', *NSF EarthCube*, March 5, 2015.
- [66] Haltas, I., **Demir, I.**, 'Flood Sensor Technologies and Trend Analysis Report', *The Scientific and Technological Research Council of Turkey (TUBITAK), Information Technology Institute*, 2014-2015.
- [67] Krajewski, W., **Demir, I.**, 'The Iowa Flood Information System Makes Iowans Safer, Better Informed', *HydroLink, IAHR*, Issue 1, 30-31, 2014.
- [68] Gil, Y, Deelman, E., **Demir, I.**, Duffy, C., Marru, S., Altintas, I., E. Pierce, M., et al. 'A Workflows Roadmap for the Geosciences', *EarthCube Workflows Community Group Report, NSF*, June 10, 2012.
- [69] Published 20 popular science articles in various English (12), Spanish (4), Turkish (2) and Russian (2) science and technology magazines

### Conference Abstracts & Presentations

- [70] Muste, M., Kim, D., **Demir, I.**, Merwade, V., 'River Data Model for Underpinning the River Research and Management', 8th International Conference on Flood Management (ICFM8), August 17 - 19, 2020, Iowa City, IA.
- [71] Sermet, Y., **Demir, I.**, 'Next-Generation Environmental Information Systems using Immersive Technologies and Artificial Intelligence', 8th International Conference on Flood Management (ICFM8), August 17 - 19, 2020, Iowa City, IA.
- [72] Ewing, G., **Demir, I.**, 'A Web-Based Framework for the Investigation of Ethical Preferences for Flood Control', 8th International Conference on Flood Management (ICFM8), August 17 - 19, 2020, Iowa City, IA.
- [73] Yildirim, E., **Demir, I.**, 'Urban and Rural Flood Vulnerability Assessment for Iowa', 8th International Conference on Flood Management (ICFM8), August 17 - 19, 2020, Iowa City, IA.
- [74] **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-Side Web Systems', 8th International Conference on Flood Management (ICFM8), August 17 - 19, 2020, Iowa City, IA.

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- [75] Sit, M., Yildirim, E., **Demir, I.**, 'Forecasting Rainfall Using Deep Convolutional Neural Networks', 8th International Conference on Flood Management (ICFM8), August 17 - 19, 2020, Iowa City, IA.
- [76] Xiang, Z., **Demir, I.**, 'Streamflow Forecasting with Upstream Sensor Information using Deep Learning', 8th International Conference on Flood Management (ICFM8), August 17 - 19, 2020, Iowa City, IA.
- [77] Mount, J., Alabbad, Y., **Demir, I.**, 'Towards an Integrated and Realtime Wayfinding Framework for Flood Events', 8th International Conference on Flood Management (ICFM8), August 17 - 19, 2020, Iowa City, IA.
- [78] Demiray, B.Z., Sit, M., Yildirim, E., **Demir, I.**, 'Enhancing LiDAR Imagery for Flood Mapping Applications using Deep Neural Networks', 8th International Conference on Flood Management (ICFM8), August 17 - 19, 2020, Iowa City, IA.
- [79] Ewing, G., **Demir, I.**, 'A Web-Based Framework on Integration of Ethical Preferences in Decision-Making for Real-time Control of Water Systems', 14th International Conference on Hydroinformatics, July 26 - 30, Mexico City, Mexico.
- [80] **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-Side Web Systems', 2020 ASFP Annual National Conference, June 7-11, 2020, Fort Worth, TX.
- [81] Muste, M., **Demir, I.**, Merwade, V., Wood, M., Boyd, P., 'RIO: Data Model for Supporting River Research and Management', 2020 Geospatial Water Technology Conference, March 23-26, 2020, Austin, TX.
- [82] Luna, D., Chen, R., Yuan, C., Liang, Y., Liang, X., Bales, J., Castronova, A.M., **Demir, I.**, Hooper, R.P., Krajewski, W.F., Lin, L., Mantilla, R., Pamidighantam, S., Song, F., Zhang, Y., 'CyberWater—An open and sustainable framework for diverse data and model integration', AGU Fall Meeting, December 9-13, 2019, San Francisco, CA.
- [83] Hu, A., Li, Z., Manazir, A., **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-Side Web Systems', AGU Fall Meeting, December 9-13, 2019, San Francisco, CA.
- [84] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Sustainable Environmental Management', AGU Fall Meeting, December 9-13, 2019, San Francisco, CA.
- [85] Xiang, Z., **Demir, I.**, 'Sequence-to-Sequence Learning with Deep Neural Networks in Rainfall-Runoff Modeling in Iowa', AGU Fall Meeting, December 9-13, 2019, San Francisco, CA.
- [86] **Demir, I.**, Lee, J. S., 'An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin', MBDH All Hands Meeting, October 29-30, 2019, Rosemont, IL.
- [87] Langel, R., Sit, M.A., Cwiertny, D., **Demir, I.**, 'The Iowa Well Forecasting System (IWfOS): A web application to predict aquifers and groundwater quality', IGWA 2019 Fall Conference, October 17, 2019, Cedar Rapids, IA.
- [88] Sermet, Y., **Demir, I.**, 'Virtual Stage Sensors: Alternative Approaches for Smartphone-Based Crowdsourced Water Level Measurements', Tapia 2019 - ACM Richard Tapia Celebration of Diversity in Computing, September 18-21, 2019, San Diego, CA.

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- [89] Hu, A., Li, Z., Manazir, A., **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-Side Web Systems', CUAHSI Informatics Conference, July 29-31, 2019, Provo, UT.
- [90] Sermet, Y., **Demir, I.**, 'Flood Action VR: A Virtual Reality Framework for Disaster Awareness and Emergency Response Training', ACM SIGGRAPH 2019, July 28 - August 1, 2019, Los Angeles, CA.
- [91] Powell, J., Karpatne, A., Garijo, D., Martin, J., Hardesty-Lewis<sup>1</sup>, D., Marchetto, P., Cleveland, S., Daniels, M., Athanasiadis, I., Keys, P., **Demir, I.**, Peckham, S., Hill, M., Ebert-Uphoff, I., Pennington, D., Jacobs, G., Gil, Y., Pierce, S., 'Creating Sustainable Knowledge Centric Communities with Artificial Intelligence Applications to Earth Science Problems', EarthCube Annual Meeting, June 12-14, 2019, Denver, CO.
- [92] **Demir, I.**, Krajewski, W. F., 'Next Generation Information and Communication Systems for Flooding', ASFPM Annual National Conference, May 19-23, 2019, Cleveland, OH.
- [93] Sermet, Y., **Demir, I.**, 'Virtual Stage Sensors: Alternative Approaches for Smartphone-Based Crowdsourced Water Level Measurements', The 17th Annual College of Engineering Research Open House, April 11, 2019, Iowa City, IA, USA.
- [94] **Demir, I.**, 'Iowa Flood Information System Demo and Workshop', Iowa Water Conference, March 12-13, 2019, Ames, IA.
- [95] **Demir, I.**, 'Intelligent Systems and Machine Learning Applications in Environmental Sciences', UIOWA Informatics Showcase, February 15, 2019, Iowa City, IA, USA.
- [96] Sit, M. A., Seo, B. C., Krajewski, W. F., **Demir, I.**, 'Deep Neural Networks Based Augmentation of Rainfall Data', AMS Annual Meeting, January 6-10, 2019, Phoenix, AZ.
- [97] Seo, B. C., Keem, M., **Demir, I.**, Krajewski, W. F., 'A Cloud Infrastructure for Rainfall Metadata Search and Product Generation Based on the Big Data of NEXRAD', AMS Annual Meeting, January 6-10, 2019, Phoenix, AZ.
- [98] **Demir, I.**, Demiray, B. Z., Sit, M. A., Yildirim, E., 'Enhancing Lidar Data using Generative Adversarial Networks', AGU Fall Meeting, December 10-14, 2018, Washington, DC.
- [99] **Demir, I.**, Sermet, Y., 'Integration of Intelligent Systems and Novel Visualization Techniques in Data-Driven Geoscience Education', AGU Fall Meeting, December 10-14, 2018, Washington, DC.
- [100] **Demir, I.**, Xiang, Z., 'Runoff Prediction using Long-Short Term Memory Model', AGU Fall Meeting, December 10-14, 2018, Washington, DC.
- [101] **Demir, I.**, Krajewski, W. F., Jones, C. S., Schilling, K., Weber, L. J., Lee, J. S., Warner, R. E., Gassman, P. W., 'An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin', MBDH All Hands Meeting, November 6-7, 2018, Cleveland, OH.
- [102] Yildirim, E., **Demir, I.**, 'Integrated Decision Support System for Flood Mitigation Practices', Upper Mississippi Conference, October 24-25, 2018, Moline, IL.
- [103] Chen, P., Campbell, A.M., **Demir, I.**, 'A Generalized Routing and Accessibility Analysis System for Flooding: Iowa Testbed', INFORMS Annual Meeting, September 19-22, 2018, Orlando, FL.

- 
- [104] Sermet, Y., **Demir, I.**, 'Flood Action VR: A Virtual Reality Framework for Disaster Awareness and Emergency Response Training', *Tapia 2018 - ACM Richard Tapia Celebration of Diversity in Computing*, September 19-22, 2018, Orlando, FL.
- [105] Sit, M., **Demir, I.**, 'Artificial Neural Networks Based Flood Forecasting', *Tapia 2018 - ACM Richard Tapia Celebration of Diversity in Computing*, September 19-22, 2018, Orlando, FL.
- [106] Sermet, Y., **Demir, I.**, 'Flood AI: An Intelligent Systems for Discovery and Communication of Disaster Knowledge', *9th International Congress on Environmental Modelling and Software*, June 24-28, 2018, Fort Collins, CO.
- [107] **Demir, I.**, 'Disaster Communication Using Intelligent Systems, Holograms and Virtual Reality', *Moving Forward: Pathways to Building Community Resilience, National Academy of Science*, June 19, 2018, Cedar Rapids, IA.
- [108] Gariyo, D., Martin, J., Freed, N., Pierce, S., Gil, Y., Thompson, D. R., **Demir, I.**, Ebert-Uphoff, I., 'IS-GEO - A Research Coordination Network on Intelligent Systems Research to Support the Geosciences', *EarthCube All Hands Meeting (AHM)*, June 6-8, 2018, Washington, DC.
- [109] **Demir, I.**, 'Disaster Communication Using Intelligent Systems, Holograms and Virtual Reality', *2018 GeoRodeo*, May 4, 2018, Austin, TX, USA.
- [110] Yildirim, Enes, **Demir, I.**, 'Integrated Disaster Decision Support and Visualization System', *The 15th Annual College of Engineering Research Open House*, April 12, 2018, Iowa City, IA, USA.
- [111] Sermet, Y., **Demir, I.**, 'Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence: Flood Expert', *The 15th Annual College of Engineering Research Open House*, April 12, 2018, Iowa City, IA, USA.
- [112] **Demir, I.**, 'Communication of Extreme Events using Intelligent Systems and Visualization', *UIOWA Informatics Showcase*, March 23, 2018, Iowa City, IA, USA.
- [113] **Demir, I.**, Sermet, Y., Krajewski, W.F., 'An Intelligent System for Discovery and Communication of Extreme Events', *AMS Annual Meeting*, January 7-11, 2018, Austin, TX, USA.
- [114] Zanchetta, A.D.L., Mantilla, R., **Demir, I.**, Krajewski, W.F., 'IFIS Model-Plus: A Web-Based GUI for Visualization, Comparison and Evaluation of Distributed Flood Forecasts and Hindcasts', *AGU Fall Meeting*, December 11-15, 2017, New Orleans, LA, USA.
- [115] **Demir, I.**, Sermet, Y., 'Flood AI: An Intelligent Systems for Discovery and Communication of Disaster Knowledge', *AGU Fall Meeting*, December 11-15, 2017, New Orleans, LA, USA.
- [116] Ebert-Uphoff, I., Thompson, D.R., **Demir, I.**, Gel, Y.R., Hill, M., Karpatne, A., Guereque, M., Kumar, V., Cabral-Cano, E., Smyth., P., 'Building Bridges Between Geoscience and Data Science through Benchmark Data Sets', *AGU Fall Meeting*, December 11-15, 2017, New Orleans, LA, USA.
- [117] Sermet, Y., **Demir, I.**, 'Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence: Flood AI Alpha', *Tapia Conference*, September 20-23, 2017, Atlanta, GA, USA.

- [118] Zanchetta, A.D.L., Mantilla, R., **Demir, I.**, 'IFIS Model-Plus: A Web-Based GUI for Visualization, Comparison and Evaluation of Distributed Hydrologic Model Outputs', 2017 CUAHSI Conference on Hydroinformatics, July 25-27, 2017, Tuscaloosa, AL, USA.
- [119] **Demir, I.**, Sermet, Y., 'Intelligent Systems and Knowledge Discovery for Data-Driven Communication and Education', 2017 CUAHSI Conference on Hydroinformatics, July 25-27, 2017, Tuscaloosa, AL, USA.
- [120] Sermet, Y., Sit, M.A., **Demir, I.**, 'Benchmark of Client and Server-Side Catchment Delineation Approaches on Web-Based Systems', 2017 CUAHSI Conference on Hydroinformatics, July 25-27, 2017, Tuscaloosa, AL, USA.
- [121] Muste, M., **Demir, I.**, 'Prototypes for Flood Information and Decision-Support Systems', Global Flood Partnership 2017 Conference, June 27-29, 2017, Tuscaloosa, AL, USA.
- [122] Gil, Y., ..., **Demir, I.**, et al., 'The OntoSoft Geosciences Paper of the Future Initiative: Promoting Best Practices for Digital Scholarship, Reproducible Research, and Open Science', EarthCube All Hands Meeting, June 7-9, 2017, Seattle, WA, USA.
- [123] Sermet, Y., Sit, M., **Demir, I.**, 'Real-Time Web-Based Watershed Delineation Using JavaScript, Python and WebGL', AWWA Annual Conference and Exposition (ACE17), June 11-14, 2017, Philadelphia, PA, USA.
- [124] Yildirim, E., Sermet, Y., **Demir, I.**, 'Flood Emergency Decision Support System and Loss Estimation on the Web using HAZUS', 15th Annual College of Engineering Research Open House, April 6, 2017, Iowa City, IA, USA.
- [125] Yildirim, E., Sermet, Y., **Demir, I.**, 'Flood Loss Estimation and Decision Support Framework on the Web', 19th Annual James F. Jakobsen Memorial Graduate Conference, March 25, 2017, Iowa City, IA, USA.
- [126] Sermet, Y., Agliamzanov, R., Sit, M., **Demir, I.**, 'Scientific Computations on GPU on The Web: A Use Case of Distributed Volunteer Computing for Hydrological Applications', *GPU Technology Conference*, May 8-11, 2017, San Jose, CA, USA.
- [127] **Demir, I.**, Sermet, Y., 'Intelligent Systems and Knowledge Discovery for Communication of Extreme Weather and Disaster Preparedness', *GPU Technology Conference*, May 8-11, 2017, San Jose, CA, USA.
- [128] Sermet, Y., Sit, M., **Demir, I.**, 'Benchmark of Client and Server-Side Catchment Delineation Approaches on Web-Based Systems', *Iowa Water Conference*, March 22-23, 2017, Ames, IA, USA.
- [129] Yildirim, E., Sermet, Y., **Demir, I.**, 'Web-based Flood Hazard Estimation and Emergency Management', *Iowa Water Conference*, March 22-23, 2017, Ames, IA, USA.
- [130] Xu, H. Hameed, H., Windsor, M., Smith, J., Hunemuller, T., Muste, M., **Demir, I.**, Stevenson, M. B., 'An Iowa Prototype for a Generic Watershed Decision Support System', *Iowa Water Conference*, March 22-23, 2017, Ames, IA, USA.

- 
- [131] Seo, B.C., **Demir, I.**, Keem, M., Goska, R., Krajewski, W. F., 'Cloud-based NEXRAD Data Processing and Analysis for Hydrologic Applications', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [132] Villanueva, P., Sermet, Y., **Demir, I.**, 'Virtual Stream Stage Sensor Using Projected Geometry and Augmented Reality for Crowdsourcing Citizen Science Applications', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [133] **Demir, I.**, Sermet, Y., 'Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence: Flood AI Alpha', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [134] Yu, X., Gil, Y., David, C., **Demir, I.**, Essawy, B., Fulweiler, R., Goodall, J., Karlstrom, L., Lee, H., Mills, H., Pierce, S., Pope, A., Tzeng, M., Villamizar, S., 'The Geoscience Paper of the Future: Best Practices for Documenting and Sharing Research from Data to Software to Provenance', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [135] Hossein-Hosseiny, S. M., Zarzar, C., Gomez, M., Siddique, R., Smith, V., Mejia, A., **Demir, I.**, 'Quantifying Uncertainty in Flood Inundation Mapping Using Streamflow Ensembles and Multiple Hydraulic Modeling Techniques', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [136] Sit, M.A., Sermet, Y., **Demir, I.**, 'Flood and Weather Monitoring Using Real-time Twitter Data Streams', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [137] Sermet, Y., Sit, M.A., **Demir, I.**, 'Benchmark of Client and Server-Side Catchment Delineation Approaches on Web-Based Systems', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [138] Yildirim, E., Sermet, Y., **Demir, I.**, 'Flood Damage and Loss Estimation for Iowa on Web-based Systems using HAZUS', *American Geophysical Union (AGU) Fall Meeting*, December 12-16, 2016, San Francisco, CA, USA.
- [139] E. Yildirim, **Demir, I.**, 'Real Time Flood Loss Estimation and Emergency Decision Support Systems on the Web', *CyberGIS'16 - Third International Conference on CyberGIS and Geospatial Data Science*, July 26-28, 2016, Urbana, IL, USA.
- [140] Y. Sermet, **Demir, I.**, 'Real-Time Web-Based Watershed Delineation Using JavaScript, Python and WebGL', *CyberGIS'16 - Third International Conference on CyberGIS and Geospatial Data Science*, July 26-28, 2016, Urbana, IL, USA.
- [141] Xu, H., Hameed, H., **Demir, I.**, Muste, M., Smith, J., Stevenson, M.B., Hunemuller, T., 'Visualization Platform for Collaborative Modeling', *2016 AWRA Summer Specialty Conference*, GIS and Water Resources IX, July 11-13, 2016, Sacramento, CA, USA.
- [142] Muste, M., **Demir, I.**, Xu, H., Windsor, M., Hameed, H., 'Iowa Watershed Decision Support System: Prototype DSS for interjurisdictional collaboration in water resource management', *UIOWA Informatics Showcase*, April 22, 2016, Iowa City, IA, USA.

- 
- [143] A.D.L. Zanchetta, R. Mantilla, **Demir, I.**, 'An Interface for Comparison of Iowa Flood Center Simulation Products', *UIOWA Informatics Showcase*, April 22, 2016.
- [144] Y. Sermet, **Demir, I.**, 'Computational Knowledge Engine for Hydrological Systems using Semantic Web', *UIOWA Informatics Showcase*, April 22, 2016, Iowa City, IA, USA.
- [145] E. Yildirim, **Demir, I.**, 'Real-Time Emergency Response and Flood Loss Estimation via HAZUS-MH on the Web', *UIOWA Informatics Showcase*, April 22, 2016, Iowa City, IA, USA.
- [146] **Demir, I.**, 'Next Generation Hydroinformatics Systems for Big Data Management, Analysis, and Visualization', *UIOWA Informatics Showcase*, April 22, 2016, Iowa City, IA, USA.
- [147] **Demir, I.**, Krajewski, W.F., 'GPGPU Applications for Hydrological and Atmospheric Simulations and Visualizations on the Web', *GPU Technology Conference*, April 4-7, 2016, San Jose, CA, USA.
- [148] Sermet, Y., **Demir, I.**, 'Client-side GPGPU Web Application for Catchment Delineation and Watershed Segmentation', *GPU Technology Conference*, April 4-7, 2016, San Jose, CA, USA.
- [149] Sermet, Y., **Demir, I.**, Krajewski, W.F., 'Voice-enabled Knowledge Engine using Ontologies and Natural Language Processing for Weather and Hydrological Data', *Iowa Water Conference, March 23-24, 2016*, Ames, IA, USA.
- [150] Sit, M.A., Sermet, Y., **Demir, I.**, Krajewski, W.F., 'Real-time Social Media Analysis for Flood Preparedness and Response', *Iowa Water Conference, March 23-24, 2016*, Ames, IA, USA.
- [151] Onkal-Engin, G., **Demir, I.**, Adiller, A., Çelen, M., Dogan, A., Varank, G., Engin, S.N., 'Web-based Watershed Information Systems – Advantages for Decision Support Systems', *International Water Conference 2016 on Water Resource in Arid areas: The Way Forward*, March 13-16, 2016, Muscat, Oman.
- [152] **Demir, I.**, Sermet, Y., Krajewski, W., 'Voice-enabled Knowledge Engine using Ontologies and Natural Language Processing for Weather and Hydrological Data', in *Proceedings of 32th Conference on Environmental Information Processing Technologies, 2016 AMS Annual Meeting*, January 10-14, 2016, New Orleans, LA, USA.
- [153] **Demir, I.**, Krajewski, W., 'Novel Cyberinfrastructure Systems for Scientific Visualization of Large-Scale Radar and Satellite Data on the Web', in *Proceedings of 32th Conference on Environmental Information Processing Technologies, 2016 AMS Annual Meeting*, January 10-14, 2016, New Orleans, LA, USA.
- [154] Sit, M.A., Sermet, Y., **Demir, I.** 'Real-time Social Media Analysis for Flood Monitoring and Prediction - Twitter Use Case', *American Geophysical Union (AGU, Virtual Showcase*, December 2015, Washington, DC, USA.
- [155] Sermet, Y., **Demir, I.**, 'A Comprehensive Flood Ontology for Environmental Cyberinfrastructure Systems', *American Geophysical Union (AGU, Virtual Showcase*, December 2015, Washington, DC, USA.

- 
- [156] **Demir, I.**, Szczepanek, R., 'Analysis and Benchmark of Hydrological Network Representation Models for Improved Access and Query in Web-based System', *American Geophysical Union (AGU) Fall Meeting*, December 14-18, 2015, San Francisco, CA, USA.
- [157] **Demir, I.**, Sermet, Y., Krajewski, W.F., 'Voice-enabled Knowledge Engine using Flood Ontology and Natural Language Processing', *American Geophysical Union (AGU) Fall Meeting*, December 14-18, 2015, San Francisco, CA, USA.
- [158] **Demir, I.**, 'Novel Web-based Education Platforms for Information Communication utilizing Gamification, Virtual and Immersive Reality', *American Geophysical Union (AGU) Fall Meeting*, December 14-18, 2015, San Francisco, CA, USA.
- [159] Gil, Y., Duffy, C., Mattmann, C., Robinson, E., David, C., **Demir, I.**, Essawy, B., Fulweiler, R., Goodall, J., Karlstrom, L., Lee, H., Mills, H., Oh, J., Pierce, S., Pope, A., Tzeng, M., Venayagamoorthy, K., Villamizar, S., Yu, X., 'The Geoscience Paper of the Future Initiative: Training Scientists in Best Practices of Software Sharing', *3rd Workshop on Sustainable Software for Science Practice and Experiences (WSSSPE3)*, September 28-29, 2015, Boulder, CO, USA.
- [160] Weber, L. J., Krajewski, W., **Demir, I.**, 'Iowa Flood Center and Iowa Nutrient Research Center: Critical Resources for Improved Watershed Resiliency and Decision-Making', *3rd CUAHSI Conference on HydroInformatics. Model and Data Interoperability: From Theory to Practice*, July 15-17, 2015, Tuscaloosa, AL, USA.
- [161] **Demir, I.**, 'Novel Cyberinfrastructure Systems for Scientific Visualization of Large-Scale Environmental Observation and Simulation Data', *3rd CUAHSI Conference on HydroInformatics. Model and Data Interoperability: From Theory to Practice*, July 15-17, 2015, Tuscaloosa, AL, USA.
- [162] **Demir, I.**, Krajewski, W., 'Towards an Interoperable Flood Preparedness and Response Cyberinfrastructure', *3rd CUAHSI Conference on HydroInformatics. Model and Data Interoperability: From Theory to Practice*, July 15-17, 2015, Tuscaloosa, AL, USA.
- [163] **Demir, I.**, 'Scientific Visualization of Large-Scale Geospatial Data using Web Technologies', *2015 Unidata Users Workshop: Data-Driven Geoscience: Applications, Opportunities, Trends, and Challenges*, June 22-25, 2015, Boulder, CO, USA.
- [164] **Demir, I.**, Szczepanek, R., 'Benchmark Toolkit for Hydrological Network Representation Models', *NSF EarthCube All Hands Meeting*, May 27-29, 2015, Arlington, VA, USA.
- [165] Gil, Y., **Demir, I.**, Mills, H., Oh, J., Pierce, S., Tzeng, M., Yu, X., Robinson, E., 'Geoscience Papers of the Future: The Importance of Software Sharing for Science Reproducibility', *NSF EarthCube All Hands Meeting*, May 27-29, 2015, Arlington, VA, USA.
- [166] **Demir, I.**, 'Scientific Visualization of Large-Scale Geospatial Data using Web Technologies', *NSF EarthCube All Hands Meeting*, May 27-29, 2015, Arlington, VA, USA.
- [167] **Demir, I.**, 'Towards an Integrated Flood Preparedness and Response in Iowa using Cyberinfrastructure', *127th Iowa Academy of Science (IAS) Annual Meeting*, April 17-18, 2015, Iowa City, IA, USA.



- 
- [168] **Demir, I.**, 'Game-based Learning and Simulation System using Web Technologies and GPU', *GPU Technology Conference*, March 17-20, 2015, San Jose, CA, USA.
- [169] **Demir, I.**, Agliamzanov, R., 'Web-based Distributed Voluntary Computing for Large Scale Scientific Computations using GPU', *GPU Technology Conference*, March 17-20, 2015, San Jose, CA, USA.
- [170] **Demir, I.**, 'Towards an Integrated Flood Preparedness and Response in Iowa: Centralized Data access, Analysis, and Visualization', *Iowa Water Conference, March 2-3, 2015, Ames, IA, USA*.
- [171] **Demir, I.**, 'A Web-based Distributed Voluntary Computing Platform for Large Scale Hydrological Computations', *Iowa Water Conference, March 2-3, 2015, Ames, IA, USA*.
- [172] **Demir, I.**, Agliamzanov, R., 'A Web-based Distributed Voluntary Computing Platform for Large Scale Hydrological Computations', *American Geophysical Union (AGU) Fall Meeting*, December 15-19, 2014, San Francisco, CA, USA.
- [173] **Demir, I.**, 'Interactive Web-based Hydrological Simulation System as an Education Platform using Augmented and Immersive Reality', *American Geophysical Union (AGU) Fall Meeting*, December 15-19, 2014, San Francisco, CA, USA.
- [174] **Demir, I.**, Krajewski, W., 'Towards an Integrated Flood Preparedness and Response: Centralized Data Access, Analysis, and Visualization', *American Geophysical Union (AGU) Fall Meeting*, December 15-19, 2014, San Francisco, CA, USA.
- [175] **Demir, I.**, Goska, R., Krajewski, W., 'Field Experiment Planning and Data Management using Cyberinfrastructure', *CUAHSI Virtual Workshop: Field Data Management Solutions*, October 30, 2014, USA.
- [176] Haltas, I., **Demir, I.**, 'Toward a Flood Information System (TABIS) for Turkey', 11th International Congress on Advances in Civil Engineering - ACE 2014, October 21-25, 2014, Istanbul, TURKEY.
- [177] Haltas, I., **Demir, I.**, 'Turkey Flood Information System (TABIS)', *Remote Sensing and Geographical Information Systems (UZAL-CBS)*, October 14-17, 2014, Istanbul, TURKEY. [Turkish]
- [178] **Demir, I.**, 'Novel Scientific Visualization Techniques for Communicating Environmental Information', *Iowa Space Grant Consortium Regional Meeting*, September 19-20, 2014, Des Moines, IA, USA.
- [179] Haltas, I., **Demir, I.**, 'Flood Information System (TABIS) for Turkey', 6th International Conference on Flood Management (ICFM6) - Floods in a Changing Environment, September 16-18, 2014, São Paulo, BRAZIL.
- [180] **Demir, I.**, 'Interactive Web-based Flood Simulation System as an Education Platform for Hydrological Concepts', *HIC 2014 – 11th International Conference on Hydroinformatics*, August 17-21, 2014, New York, NY, USA.
- [181] **Demir, I.**, Small, S., Goska, R., Keahey, K., Armstrong, P., Riteau, P., Seo, B., Mantilla, R., Krajewski, W., 'Hydroinformatics on the Cloud: Data Integration, Modeling and Information Communication for Flood Risk Management', *HIC 2014 – 11th International Conference on Hydroinformatics*, August 17-21, 2014, New York, NY, USA.

- 
- [182] **Demir, I.**, 'Interactive Web-based Hydrological Simulation System as an Education Platform', *CUAHSI 2014 Biennial Colloquium*, July 28-30, 2014, Shepherdstown, WV, USA.
- [183] Krajewski, W., **Demir, I.**, 'An Information System for the NASA GPM Iowa Flood Studies (IFloodS) Field Campaign', *8th International Congress on Environmental Modelling and Software (iEMSs)*, June 15-19, 2014, San Diego, California, USA.
- [184] **Demir, I.**, 'Interactive Web-based Hydrological Simulation System as an Education Platform', *8th International Congress on Environmental Modelling and Software (iEMSs)*, June 15-19, 2014, San Diego, California, USA.
- [185] **Demir, I.**, 'Gesture-based Interactive Visualization of Large-Scale Data using GPU and Latest Web Technologies', *GPU Technology Conference*, March 24-27, 2014, San Jose, CA, USA.
- [186] **Demir, I.**, 'Interactive Web-based Flood Simulation System for Realistic Experiments of Flooding and Flood Damage', *Iowa Water Conference*, March 3-4, 2014, Ames, IA, USA.
- [187] **Demir, I.**, 'Interactive Visualization of Large-Scale Hydrological Data using Emerging Technologies in Web Systems and Parallel Programming', *Iowa Water Conference*, March 3-4, 2014, Ames, IA, USA.
- [188] **Demir, I.**, Krajewski, W., 'Interactive Visualization of Large-Scale Radar and Rainfall Data using Graphical Processing Unit and Latest Web Technologies', *in Proceedings of 30th Conference on Environmental Information Processing Technologies, 2014 AMS Annual Meeting*, February 2-6, 2014, Atlanta, GA, USA.
- [189] **Demir, I.**, Krajewski, W., 'Interactive Visualization of Large-Scale Hydrological Data using Emerging Technologies in Web Systems and Parallel Programming', *American Geophysical Union (AGU) Fall Meeting*, December 9-13, 2013, San Francisco, CA, USA.
- [190] **Demir, I.**, 'Interactive Web-based Floodplain Simulation System for Realistic Experiments of Flooding and Flood Damage', *American Geophysical Union (AGU) Fall Meeting*, December 9-13, 2013, San Francisco, CA, USA.
- [191] **Demir, I.**, Krajewski, W., 'Interactive Visualization of Large-Scale Hydrological Data using Graphical Processing Unit and Latest Web Technologies', *CUAHSI Conference on Hydroinformatics and Modeling*, July 17-19, 2013, Logan, UT, USA.
- [192] Sonmez, O., Dogan, E., **Demir, I.**, 'Investigation of Flood Risk of The Lower Evros River', *The 15th Annual James F. Jakobsen Graduate Conference*, April 6, 2013, Iowa City, IA, USA.
- [193] Sonmez, O., Dogan, E., Ceribasi, G., **Demir, I.**, 'Investigation of Flood Risk Assessment in Lower Sakarya River, Turkey', *Research Open House*, April 4-5, 2013, Iowa City, IA, USA.
- [194] **Demir, I.**, Krajewski, W., 'Flood Risk Management in Iowa through an Integrated Flood Information System', *European Geosciences Union (EGU) General Assembly*, April 7-12, 2013, Vienna, Austria.

- 
- [195] Krajewski, W., Seo, B., Goska, R., **Demir, I.**, Elsaadani, M., 'Precipitation Datasets for the GPM Iowa Flood Studies (IFloodS) Field Experiment', *European Geosciences Union (EGU) General Assembly*, April 7-12, 2013, Vienna, Austria.
- [196] **Demir, I.**, 'Novel Web-based Interfaces for Interactive Visualization of Large-Scale Hydrological and Meteorological Data', *Iowa Water Conference*, March 4-5, 2013, Ames, IA, USA.
- [197] Sonmez, O., Goska, R., Lee, K., **Demir, I.**, Krajewski, W.F., 'Discharge Estimations for Iowa Flood Center Stage Sensors', *Iowa Water Conference*, March 4-5, 2013, Ames, IA, USA.
- [198] Yolanda, G., Deelman, E., **Demir, I.**, Duffy, C., Marru, S., Pierce, M., Wiener, G., 'Designing a Roadmap for Workflow Cyberinfrastructure in the Geosciences: From Big Data to the Long Tail', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [199] Sonmez, O., Dogan, E., **Demir, I.**, 'Creating Flood Inundation Maps Using 1D Hydrologic Model and GIS for Lower Meric River Basin, Turkey', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [200] Krajewski, W.F., Kruger, A., Niemeier, J.J., Mantilla, R., Ceynar, D.L., Goska, R., **Demir, I.**, Fahim Rezaei, H., Gaynor, K.T., 'The Iowa Flood Center's River Stage Sensor Network—Overview', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [201] **Demir, I.**, Krajewski, W., 'Future of Hydroinformatics: Towards Open, Integrated and Interactive Online Platforms', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [202] **Demir, I.**, Krajewski, W., 'Novel Scientific Visualization Interfaces for Interactive Information Visualization and Sharing', *American Geophysical Union (AGU) Fall Meeting*, December 3-7, 2012, San Francisco, CA, USA.
- [203] **Demir, I.**, Krajewski, W., 'Information Communication using Knowledge Engine on Flood Issues', *Tenth International Conference on Hydroscience & Engineering (ICHE)*, November 4-7, 2012, Orlando, FL, USA.
- [204] Krajewski, W., Weber, L. J., **Demir, I.**, Mantilla, R., Young, N., Goska, R., Ceynar, D., Seo, B-C., Small, S., Kruger, A., Niemeier, J., Langel, C., 'Leveraging Federal and State Funding to Advance Flood Research and Benefit Local Public: Iowa Flood Information System', *CUAHSI 3rd Biennial Colloquium on Hydrologic Science and Engineering*, July 14-19, 2012, Boulder, CO, USA.
- [205] **Demir, I.**, Krajewski, W., 'A Novel Information Sharing Tool: IFIS Knowledge Engine', *CUAHSI 3rd Biennial Colloquium on Hydrologic Science and Engineering*, July 14-19, 2012, Boulder, CO, USA.
- [206] Krajewski, W., Weber, L., **Demir, I.**, 'Leveraging NSF Investments for Local Benefits', *American Geophysical Union (AGU) Science Policy Conference*, April 30 - May 3, 2012, Washington, DC, USA.
- [207] **Demir, I.**, Krajewski, W., 'Information Communication using Knowledge Engine on Flood Issues', *European Geosciences Union (EGU) General Assembly*, April 22-27, 2012, Vienna, Austria.

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- [208] **Demir, I.**, Krajewski, W., 'A Web-based Data Intensive Visualization of Real-time River Drainage Network Response to Rainfall', *European Geosciences Union (EGU) General Assembly*, April 22-27, 2012, Vienna, Austria.
- [209] **Demir, I.**, Krajewski, W., Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System: Towards Integrated Data Management, Analysis and Visualization', *European Geosciences Union (EGU) General Assembly*, April 22-27, 2012, Vienna, Austria.
- [210] **Demir, I.**, Krajewski, W., Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System', *Second National Flood Workshop*, February 27 - March 1, 2012, Houston, TX, USA.
- [211] **Demir, I.**, Krajewski, W., 'A Prototype Visualization of Real-time River Drainage Network Response to Rainfall', *American Geophysical Union (AGU) Fall Meeting*, December 5-9, 2011, San Francisco, CA, USA.
- [212] **Demir, I.**, Krajewski, W., Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System', *American Geophysical Union (AGU) Fall Meeting*, December 5-9, 2011, San Francisco, CA, USA.
- [213] Young, N., Krajewski, W., Weber, L., Mantilla, R., **Demir, I.**, Goska, R., 'The Iowa Flood Center', *Minnesota Association of Floodplain Managers (MnAFPM) Conference*, November 16-18, 2011, Mankato, MN, USA.
- [214] Krajewski, W., **Demir, I.**, Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System (IFIS)', *The Geological Society of America (GSA) Annual Meeting*, October 9-12, 2011, Minneapolis, MN, USA.
- [215] Krajewski, W., **Demir, I.**, Goska, R., Mantilla, R., Weber, L., Young, N., 'Iowa Flood Information System (IFIS)', *CUAHSI Conference on Hydrologic Data and Information Systems*, June 22-24, 2011, Utah State University, Logan, UT, USA.
- [216] Beck, M. B., **Demir, I.**, 'Models, Informatics, & The Growth of Knowledge', *7th International Conference on Ecological Informatics (ISEI7)*, December 13-16, 2010, Ghent, Belgium.
- [217] **Demir, I.**, Beck, M. B., 'Cities as Forces for Good in the Environment: Scientific Visualization and Stakeholder Dialogue', *2nd Annual Scientific Research Day*, Graduate Students and Postdocs in Science (GSPS), June 18, 2010, University of Georgia, Athens, GA, USA.
- [218] **Demir, I.**, Parker, A. K., Beck, M. B., 'Cities as Forces for Good in the Environment: Scientific Visualization and Stakeholder Dialogue', *2010 AWRA Spring Specialty Conference: Geographic Information Systems (GIS) and Water Resources VI*, March 29-31, 2010, Orlando, FL, USA.
- [219] **Demir, I.**, Beck, M. B., 'Cities as Forces for Good in the Environment: The Role of Environmental Information Systems', *10th Annual Graduate Interdisciplinary Conference*, March 27, 2010, University of Georgia, Athens, GA, USA.
- [220] **Demir, I.**, Beck, M. B., 'Scientific Visualization and Stakeholder Dialogue', *2010 Warnell Graduate Student Research Symposium*, University of Georgia, March 4-5, 2010, Athens, GA, USA.

- [221] **Demir, I.**, Beck, M. B., 'Dynamic Spatial Information Interface for USGS Monitoring Sites', *Southern Forestry & Natural Resource Management GIS Conference*, December 7-9, 2009, Athens, GA, USA.
- [222] **Demir, I.**, Beck, M. B., 'GWIS: Georgia Watershed Information System', *Interdisciplinary Scientific Research Day*, July 1, 2009, University of Georgia, Athens, GA, USA.
- [223] **Demir, I.**, Beck, M. B., 'An Information Management System for Georgia Watersheds', *11th Annual Warnell School of Forestry and Natural Resources Graduate Student Symposium*, University of Georgia, February 26-27, 2009, Athens, GA, USA.
- [224] Walker, R. V., Shi, F., **Demir, I.**, Beck, M. B., 'High-frequency Monitoring and Modeling of Weracoba Creek Dynamic Behavior', *Weracoba Creek Water Quality Improvement Workshops*, July 25-26, 2008, Columbus State University, GA, USA.
- [225] **Demir, I.**, Beck, M. B., 'Data-processing in Management of Water Quality: Self Organizing Maps as a Multivariate Prediction Method', *10th Annual Warnell School of Forestry and Natural Resources Graduate Student Symposium*, University of Georgia, February 28-29, 2008, Athens, GA, USA.
- [226] Walker, R.V., Shi, F., **Demir, I.**, Beck, M. B., 'Hydrologic and Nutrient Behavior of a Small Basin in the Upper Chattahoochee Watershed using Near Real-time Monitoring', *Carl E. Kindsvater Symposium*, February 5, 2007, Atlanta, GA, USA.
- [227] **Demir, I.**, Beck, M. B., 'Determining the relationship between TON and NO<sub>2</sub> 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

- [228] **Demir, I.**, 'Interactive and Real-time Flood Inundation Mapping on Client-side Web Systems', IS-GEO Meeting, April 7, 2020.
- [229] 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.
- [230] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', IBM Precision Agriculture Workshop, January 7, 2020, Iowa City, IA.
- [231] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', NSF Convergence Accelerator-Open Knowledge Network EarthCube Workshop, January 6, 2020, Bethesda, MD.
- [232] **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.
- [233] **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.
- [234] **Demir, I.**, 'Next Generation Data Analytics and Communication Systems for Flooding', 2019 MATC Flood Research Workshop, November 25, 2019, University of Nebraska, Lincoln, NE.

- [235] **Demir, I.**, Campbell, A., 'Transportation Planning for Floods', 2019 MATC Flood Research Workshop, November 25, 2019, University of Nebraska, Lincoln, NE.
- [236] **Demir, I.**, 'Iowa Flood Information System (IFIS) Vision and Demo', 2019 MATC Flood Research Workshop, November 25, 2019, University of Nebraska, Lincoln, NE.
- [237] **Demir, I.**, 'Intelligent Systems and Data Analytics for Disaster Risk Communication', November 22, 2019, Purdue University, Online.
- [238] **Demir, I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', GIS Day 2019, November 13, 2019, University of Kansas, Lawrence, KS.
- [239] **Demir, I.**, Bruner, R., 'Water Quality Information Systems and Data Exchange Network', R7/R8 EPA Exchange Network Workshop, October 1, 2019, Online.
- [240] **Demir, I.**, Langel, R., Sit, M.A., 'The Iowa Well Forecasting System (IWfOS)', Iowa Flood Center, August 21, 2019, Iowa City, IA.
- [241] **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
- [242] **Demir I.**, 'Intelligent Data Analytics and Communication Systems for Disasters', *Canada Centre for Mapping and Earth Observation, Natural Resources Canada*, June 20, 2019, Online.
- [243] **Demir I.**, 'Communication of Extreme Events using Intelligent Systems and Visualization', *Department of Geographical and Sustainability Sciences*, April 19, 2019, Iowa City, IA, USA.
- [244] **Demir I.**, 'Intelligent Data Analytics and Visualization Systems for Transportation', *Iowa DOT Meeting*, UIOWA, November 9, 2018, Iowa City, IA, USA.
- [245] **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.
- [246] **Demir, I.**, 'Flood Damage and Loss Estimation on Web-based Systems', Guest Lecture, HAZUS User Call, August 8, 2017, Webinar.
- [247] **Demir, I.**, 'Cyberinfrastructure Systems for Big Data Management, Analysis, and Visualization', Guest Lecture, Computer Science, UIOWA, April 28, 2017, Iowa City, IA, USA.
- [248] **Demir, I.**, Machine Learning: Farm-to-Table Workshop, April 18-19, 2017, University of Illinois in Urbana-Champaign, Urbana, IL, USA.
- [249] **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.
- [250] **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.

- [251] **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.
- [252] **Demir, I.**, 'Cyberinfrastructure Systems for Big Data Management, Analysis, and Visualization', Webinar, HDR Engineering, February 7, 2017, Iowa City, IA, USA.
- [253] **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.
- [254] **Demir, I.**, 'Iowa Flood Center Data Resources and Iowa Flood Information System', National Water Center Summer Institute, June 13, 2016, Tuscaloosa, AL, USA.
- [255] **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.
- [256] **Demir, I.**, 'NSF Career Workshop', Training, UIOWA, OVPR, March 24, 2016.
- [257] **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.
- [258] **Demir, I.**, 'Next Generation Hydroinformatics Systems for Big Data Management, Analysis, and Visualization', Invited Talk, XSEDE Science Gateway Community Webinar, February 26, 2016.
- [259] **Demir, I.**, 'Scientific Visualization and Information Communication in Hydrological Sciences', Guest Lecture, IIHR, University of Iowa, February 4, 2016, Iowa City, IA, USA.
- [260] **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
- [261] **Demir, I.**, 'Game-based and Interactive Learning Environments', Tenth Annual Sonia Kovalevsky High School Mathematics Day, April 11, 2015, Iowa City, IA, USA
- [262] **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
- [263] **Demir, I.**, 'Interactive Visualization of Scientific Data using Web Technologies', PDE Seminar, Mathematics Department, University of Iowa, December 3, 2014, Iowa City, IA, USA
- [264] **Demir, I.**, Invitation to the **White House** Innovation for Disaster Response and Recovery Demo Day, July 29, 2014, Washington, DC, USA
- [265] **Demir, I.**, Collaboration Visit at NASA Scientific Visualization Studio at NASA Goddard Space Flight Center, June 2-6, 2014, Greenbelt, MD, USA
- [266] **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

- [267] **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
- [268] **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
- [269] **Demir, I.**, 'FloodCube: National Flood Information System', US Ignite – Gigabit Explorer Challenge, November 1-3, 2013, Kansas City, MO, USA.
- [270] **Demir, I.**, Mentor Summit, Google Summer of Code 2013, October 19-20, 2013, Mountain View, CA, USA.
- [271] **Demir, I.**, 17th GENI (The Global Environment for Network Innovations) Engineering Conference (GEC17), July 21-23, 2013, Madison, WI, USA.
- [272] **Demir, I.**, 'Flood Cube – National Flood Information Platform', US Ignite – Next Generation Application Summit, June 24-26, 2013, Chicago, IL, USA.
- [273] **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.
- [274] **Demir, I.**, 'Information Systems for Resource Management', Course Lecture, Civil and Environmental Engineering, University of Iowa, May 29, 2013, Iowa City, IA, USA.
- [275] **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.
- [276] **Demir, I.**, 'Future of Scientific Visualization and Online Mapping', GIS Day 2013, University of Iowa, April 25, 2013, Iowa City, IA, USA.
- [277] **Demir, I.**, 'EarthCube Charette: Building the Cyberinfrastructure to Better Understand Our Complex and Changing Planet', June 12-14, 2012, Arlington, VA, USA.
- [278] **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].
- [279] **Demir, I.**, 'Iowa Flood Information System', Hawkeye Caucus Day, Iowa State Capitol, March 27, 2012, Des Moines, IA, USA. [Live Demonstration]
- [280] **Demir, I.**, 'Iowa Flood Information System', Iowa Water Conference, Iowa State University, March 6-7, 2012, Ames, IA, USA. [Live Demonstration]
- [281] **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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- [282] **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]
- [283] **Demir, I.**, 'Environmental Information Systems (GWIS and IFIS) and Scientific Visualization', Turkish American Academics of Midwest (TAAM), May 21, 2011, Chicago IL, USA. [Presentation]
- [284] **Demir, I.**, 'Environmental Information Systems (GWIS, GWP and IFIS) and Scientific Visualization', Gebze Institute of Technology, April 28, 2011, Kocaeli, TURKEY. [Presentation]
- [285] **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]
- [286] **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]
- [287] **Demir, I.**, 'Semantic Web and Environmental Information Systems', *Department of Geography*, University of Georgia, October 28, 2009, Athens, GA, USA. [Invited Talk]
- [288] **Demir, I.**, 'Popular Scientific Publishing', *Second Annual Workshop for Young Scholars*, Southern Polytechnic State University, August 16, 2009, Atlanta, Georgia, USA. [Invited Talk]
- [289] **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]
- [290] **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]
- [291] **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]
- [292] **Demir, I.**, 'GWIS: Georgia Watershed Information System', *Utah Water Research Laboratory*, Utah State University, May 6, 2009, Logan, Utah, USA. [Invited Talk]
- [293] **Demir, I.**, 'GWIS: Georgia Watershed Information System', *River Basin Center 2nd Friday Symposium*, University of Georgia, April 10, 2009, Athens, GA, USA. [Invited Talk]
- [294] **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]
- [295] **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]
- [296] **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.** (PI), 'River Morphology Data and Analysis Tools (RiverMorph) – A web platform for enabling river morphology research', Source: NSF Geoinformatics, 2020-2023. Support: \$504K
- [2] **Demir, I.** (co-PI), 'Design Guidelines and Mitigation Strategies for Reducing Sedimentation of Multi-Barrel Culverts', 2020-2023. Source: US DOT, Support: \$270K
- [3] **Demir, I.** (co-PI), 'Next-Generation Stage Measurement at Ungauged Locations using IoT'. Source: IWC, 2020-21. Support: \$5K
- [4] **Demir, I.** (PI), 'Maintenance and Support for Big Sioux Flood Information System'. Source: South Dakota DNR / RESPEC, 2020-21. Support: \$20K
- [5] **Demir, I.** (PI), 'NVIDIA Deep Learning Institute Access - Teaching Kits'. Source: NVIDIA, 2019-20. Support: \$18K (Teaching Kits x 200)
- [6] **Demir, I.** (co-PI), 'Semi-Volatile PCBs: Sources, Exposures, Toxicities'. Source: US NIH, 2019-2021. Support: \$1.1M
- [7] **Demir, I.** (co-PI), 'Disaster Route Planning for Floods'. Source: MATC, US DOT, 2020. Support: \$80K
- [8] **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)
- [9] **Demir, I.** (co-PI), 'Critical Zone Observatory for Intensively Managed Landscapes (IML-CZO)'. Source: NSF CZO, 2019-2020. Support: \$25K
- [10] **Demir, I.** (PI), 'Inundation Damage Assessment Maps for Non-leveed Iowa Communities Mississippi River Front'. Source: USACE, 2019. Support: \$30K
- [11] **Demir, I.** (PI), 'Ethical and Moral Challenges for Engineers and AI: A Web-Based Serious Game for Engineering Decision Making'. Source: CoE, UIOWA, 2019-2020. Support: \$20K
- [12] **Demir, I.** (PI), 'Quantum Computing Applications in Environmental Science'. Source: Rigetti Quantum Cloud Services, 2019. Support: \$5K
- [13] **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
- [14] **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)
- [15] **Demir, I.** (PI), 'Water Quality Data Visualization'. Source: UIOWA CHEEC, 2018-2019. Support: \$38K

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- [16] **Demir, I.** (PI), 'Improving Data Integration and Exchange for EPA Current Discovery Tool'. Source: *EPA*, 2018-2020. Support: \$192K
- [17] **Demir, I.** (PI), 'Integrated Data Framework for Agricultural Flood Damage and Loss Analysis'. Source: *NSF Big Data Hub – DigitalAg Spoke*, 2018-2019. Support: \$5K
- [18] **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
- [19] **Demir, I.** (PI), 'Interactive Projector System for Collaborative Research, Communication and Outreach Activities'. Source: *UIOWA CEE Infrastructure Grant*, 2018-2019. Support: \$6.5K
- [20] **Demir, I.** (co-PI), 'Transfer of the Iowa DOT Culverts Web-Tool Prototype to Iowa DOT Mainframe'. Source: *Iowa DOT*, 2018-19. Support: \$75K
- [21] **Demir, I.** (PI), 'Data Visualization Project for Homeland Security'. Source: *Iowa Homeland Security*, 2017-18. Support: \$61K
- [22] **Demir, I.** (PI), 'Data Visualization of IWA Data and Project Sites'. Source: *Iowa Homeland Security*, 2017-21. Support: \$68K
- [23] **Demir, I.** (co-PI), 'Disaster Route Planning for Floods'. Source: *MATC, US DOT*, 2017-19. Support: \$157K
- [24] **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
- [25] **Demir, I.** (PI), 'Knowledge Discovery, Integration and Communication for Extreme Weather and Flood Resilience Using Artificial Intelligence'. Source: *AI for Earth, Microsoft & ESRI*, 2017-18. Support: \$20K (Credits for Cloud Services and ESRI Software)
- [26] **Demir, I.** (co-PI), 'Decision Support Tool for the Texas Multi-Hazard Tournament'. Source: *USACE*, 2017. Support: \$41K
- [27] **Demir, I.** (PI), 'GPGPU Techniques for Environmental Modeling Applications'. Source: *NVIDIA Academic Partnership Program, NVIDIA Inc.*, 2016. Support: NVIDIA GPU Hardware (Supplementary Support - \$3K)
- [28] **Demir, I.** (co-PI), 'Develop a Hydrologic and Hydraulic Model of the Big Sioux River Basin'. Source: *South Dakota DNR*, 2016-19. Support: \$170K
- [29] **Demir, I.** (PI), 'Interactive Web-based Digital Exhibit for Rainfall and Flood Data and Tools'. Source: *UIOWA*, 2016. Support: \$3K
- [30] **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
- [31] **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

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- [32] **Demir, I.** (PI), 'UIOWA Midwest Hackathon'. Source: *NSF, MBDH, UIOWA & Industrial Partners*, 2016-2019.
- [33] **Demir, I.** (co-PI), 'Initial All-Hands Meeting in Digital Agriculture'. Source: *NSF, Midwest Big Data Hub*, 2016. Support: \$20K
- [34] **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: \$6.47M
- [35] **Demir, I.** (PI), 'AWS Educate Program for Institutions'. Source: *Amazon*, 2015. Support: Amazon Cloud Resources for Education. Support: \$20K (credit)
- [36] **Demir, I.** (co-PI), 'Iowa Water Quality Information System'. Source: *Carver Foundation*, 2015-18. Support: \$453K
- [37] **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
- [38] **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
- [39] **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
- [40] **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)
- [41] **Demir, I.** (PI), 'Collaboration with Scientific Visualization Studio (SVS) at Goddard Space Flight Center'. Source: *NASA EPSCoR Program*, 2013. Support: \$3K
- [42] **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
- [43] **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)
- [44] **Demir, I.** (PI), 'Google Maps Engine Public Data Program'. Source: *Google*, 2013. Support: \$5K (Google Maps Engine Credit)
- [45] **Demir, I.** (PI), 'National Flood Information System'. Source: *Google*, 2013. Support: \$4K (Google Compute Engine for Research Computing)
- [46] **Demir, I.** (PI), 'FloodCube: National Flood Information System'. Source: *US Ignite / Mozilla - Gigabit Explorer Challenge*, 2013. Support: \$5K (Travel and Research Computing)

- [47] **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
- [48] **Demir, I.** (PI), 'Design and Development of UCF CHAMPS Hydrologic Information System'. Source: University of Central Florida, 2013. Support: \$16K
- [49] **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)
- [50] **Demir, I.** (PI), 'Design and Development of BlackBerry Smartphone and Tablet Applications'. Source: *BlackBerry Academic Program*, 2012. Support: BlackBerry Hardware Support (\$7K).
- [51] **Demir, I.** (co-Chair), 'EarthCube Community Workshop: Designing A Roadmap for Workflows in Geosciences'. Source: *NSF – EarthCube*, 2012. Support: \$100K.
- [52] **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.
- [53] **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)

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- [54] **Demir, I.** (Senior Personnel), 'Iowa Flood Center'. Source: *State of Iowa*. 2011-2016. Support: \$188K (Project budget: \$1.5M/annual renewal).
- [55] **Demir, I.** (Senior Personnel), 'Iowa Floodplain Mapping Program'. Source: *Iowa Department of Natural Resources*. 2011-2016. Support: \$185K (Project budget: \$10M).

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#### Grant Submissions (submitted - pending)

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- [56] **Demir, I.** (co-PI), 'Enhancing Ethical Context in the Engineering Curriculum: Ethical Dilemmas in Building New Buildings Card Game', 2020-2021. Source: COE Ethics, Support: \$20K
- [57] **Demir, I.** (PI), 'Hybrid Process-Based Machine Learning Framework to Understand Flooding in Agricultural Watersheds', 2021-2023. Source: USGS NIWR, Support: \$250K
- [58] **Demir, I.** (co-PI), 'EarthCube Pilots THYME: Transdisciplinary HYbrid Modeling Ecosystem for Earth Science and Resource Challenges', 2021-2023. Source: NSF EarthCube, Support: \$1M
- [59] **Demir, I.** (co-PI), 'Overhead Transmission Line Sag Monitoring through Augmented Reality and IoT', 2021-2023. Source: Iowa Energy Center, Support: \$300K
- [60] **Demir, I.** (co-PI), 'Understanding the Risk of Correlated and Compound Flood-Related Extremes to Identify Present and Future Resilience and Vulnerabilities of Military Installations and Facilities', 2021-2025. Source: Department of Defense, Support: \$1.8M

- [61] **Demir, I.** (co-PI), 'RII Track-2 FEC: Infrastructure for Data-Advanced Research, Education, and Engagement (I-DAREE) to improve weather intelligence, climate change assessment, and citizen science in Central US', 2020-2024. Source: National Science Foundation, Support: \$6M
- [62] **Demir, I.** (co-PI), 'Mississippi River Basin and Delta (MRB) Center', 2020-2025. Source: National Science Foundation, Support: \$25M
- [63] **Demir, I.** (co-PI), 'AI Institute: National Institute for AI-Augmented Education', 2020-2025. Source: National Science Foundation, Support: \$20M
- [64] **Demir, I.** (co-I), 'Tailored Strategies and Shared Decision-making for Family Caregivers Managing Patients' Pain: A Web App Approach and Machine Learning Approach', 2020-2022. Source: National Palliative Care Research Center, Support: \$190K
- [65] **Demir, I.** (PI), 'A Serious Game for Flood Mitigation in K-12 and Public Education', 2020-2021. Source: Iowa Science Foundation, Support: \$5K
- [66] **Demir, I.** (co-PI), 'Collaborative Research: Network Cluster: Water quality in the Western Cornbelt Critical Zone: Integrating heavily-engineered CZ gradients at scales of national interest', 2020-2025. Source: National Science Foundation, Support: \$3.2M
- [67] **Demir, I.** (co-PI), 'Missouri River Flood Inundation Model and Information System', 2020-2023. Source: Iowa Economic Development Authority, Support: \$800K
- [68] **Demir, I.** (PI), 'FloodShare Disaster Mitigation Platform', 2020-2023. Source: US-India Science and Technology Endowment Fund, Support: \$350K
- [69] **Demir, I.** (co-PI), 'Transforming the "US Cooperative Extension Service" to Empower Rural Sustainable Agriculture in the Digital Age'. Source: US NIFA, 2019-2022. Support: \$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

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- 2015-2018 *Social Media Analytics Platform*  
A web-based cyberinfrastructure system for acquisition, processing and analyzing social media data streams using natural language processing, ontology and soft computing
- 2015-2017 *NASA SMAP Information System*  
Planning, design and implementation of a web-based information system on data, information and visualizations of NASA SMAP satellite mission experiment
- 2014-present *Iowa Water Quality Information System (IWQIS)*  
A web-based information system for real-time access to state wide water quality sensors with novel visualizations and analysis capabilities
- 2013-2015 *National Flood Information System*  
A web-based information system for real-time access to nationwide stream sensors for flood warnings and water levels on Google Cloud and App Engine
- 2013-2016 *Hydrological Educational Simulation System with Virtual and Augmented Reality*  
A web-based virtual and augmented reality application for simulation of hydrological system using desktop markers and camera via WebRTC and WebGL technologies
- 2013-2014 *Turkey Flood Information System (TABIS)*  
Planning, design and implementation of a web-based information system on flood related data, information and visualizations
- 2013-2015 *NASA IFLOODS Information System*  
Planning, design and implementation of a web-based information system on data, information and visualizations of NASA GPM satellite mission experiment
- 2012-2013 *UCF CHAMPS Hydrologic Information System*  
Planning, design and implementation of a web-based information system on coastal inundation and modeling data, information and visualizations
- 2012-2013 *Field Campaign Management System - NASA IFLOODS Project*  
A web-based interface for positioning radars and rainfall instruments with adjustable range and location, watersheds, and rich spatial layers on a map interface
- 2012-2013 *Fund-A-Sensor Initiative*  
A crowd-funding initiative for getting support to develop and deploy new stream sensors for improving flood monitoring in Iowa
- 2011-2016 *IFIS Knowledge Engine & Smart Assistant*  
Intelligent knowledge generation system supported with ontology, relational database queries, real-time data, hydrological models, and scientific visualizations
- 2010-present *Iowa Flood Information System – IFIS*  
Planning, design and implementation of a web-based information system on flood related data, information and visualizations
- 2009-2012 *Global Water Platform – GWP*  
Planning, design and implementation of a web-based platform on water
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|           |  |
|-----------|--|
| 2007-2010 | <i>Georgia Watershed Information System – GWIS</i><br>A prototype of an information system for Georgia watersheds                                |
| 2006-2011 | <i>Toxuus: Scientific Collaboration and Research Platform</i><br>Academic Research Group & Project Management System                             |
| 2000      | <i>B2B (Business to Business) Portal</i><br>Real time product exchange, stock, and product supply/demand management                              |
| 1999      | <i>Domain name and extension system in foreign languages</i><br>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<br>Standalone application for modeling and visualization of noise distribution and maps<br><i>Company</i> : TAGEM Technology, Istanbul, TURKEY      |
| 2003      | <i>Izmit Bay Technological Forecast Project</i> , Environmental Group, Kocaeli Industry, Istanbul, TURKEY, Mathematical and Computational Modeling Responsibility<br><i>Sponsor</i> : Kocaeli Industry Association, Kocaeli, TURKEY |
| 2002-2004 | <i>Environmental Impact Assessment Projects</i><br><i>Company</i> : Procter & Gamble and 7 other companies from various industries, TURKEY  |
| 2002      | <i>Wastewater Treatment Plant Design</i> , Aydin, TURKEY<br>Term Project, Gebze Institute of Technology, Kocaeli, TURKEY  |

### Web-based Tools and Mobile Applications

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



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- 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

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- 2014 *XPOL Radar Data Visualization Interface*: A custom web-based interface for visualizing XPOL radar data in real-time – NASA IFLOODS Project
  - 2013 *IFIS app on Firefox OS and Windows 8*: IFIS is ported to work with new Firefox mobile OS and Windows 8 devices.
  - 2013 *Real-time South Carolina Rainfall Interface*: A web-based interface for 6-hour animation of real-time rainfall intensity maps for South Carolina.
  - 2013 *Flood Warning Widget*: A web-based widget for reporting flood warnings in Iowa on blogs and third party websites using IFIS.
  - 2013 *Disdrometer Visualization Interface*: A web-based interface for visualizing drop size and velocity of rain drops using disdrometer data in real-time – NASA IFLOODS Project
  - 2013 *Rain-Gauge / Soil Moisture Visualization Interface*: A web-based interface for visualizing rain and soil moisture gauge data in real-time – NASA IFLOODS Project
  - 2012 *Rainfall Data Visualizer*: A web-based interface for browsing historical rainfall data with zoom, and advanced visualization capabilities – NASA IFLOODS Project
  - 2012 *Radar Data Browser*: A web-based interface for browsing historical radar data with zoom, vertical and horizontal visualization capabilities – NASA IFLOODS Project
  - 2012 *Augmented Reality Application for iOS*: Web services to overlay real-time stream sensor data and Iowa CAFOs locations in Layar iPhone and iPad applications
  - 2012 *Real-time Florida/Colorado Rainfall Interface*: A web-based interface for 6-hour animation of real-time rainfall intensity maps for Florida and Colorado.
  - 2012 *Streamflow Visualization Interface*: A web-based interface for visualization of stream flow data on Google Maps using HTML 5 and canvas.
  - 2012 *3D Interactive Book for IFIS*: A web-based 3D interactive children’s book is designed about IFIS and hydrological concepts for educational purposes
  - 2012 *IFIS Mobile*: BlackBerry PlayBook Tablet native application for Iowa Flood Information System (IFIS)
  - 2012 *NASA Rain Gauge Network*: A web-based interface to access and visualize data on NASA rain gauge network
  - 2011 *Flood Map Simulator Game*: A web-based flood simulator game to teach flood related concepts interactively
  - 2011 *Flood Map 3D Simulation*: A web-based flood simulation for flying and navigating over the flood inundation map of Cedar Rapids, Iowa
  - 2011 *The Pokki App Development Challenge entry*: Pokki web application for Iowa Flood Information System (IFIS)
  - 2011 *EPA Apps for the Environment Challenge entry*: Google Chrome web application for Iowa Flood Information System (IFIS)

- 2011 *Health 2.0 Developer Challenge entry: iPhone App Using Public Data for Cancer Prevention and Control*, Database development, data integration
- 2011 *Flood Inundation Map Flight Simulator: A real-time web-based flight simulator for navigating over a flood inundation map and remote control using iOS devices*
- 2011 *Rainfall and Flood Forecast Simulation: A real-time web-based simulation using HTML and canvas for rainfall and flood forecast data*
- 2011 *Real-time Flood Inundation Map Simulation: A real-time web-based simulation using HTML 5 and Canvas for Cedar Rapids, Iowa*
- 2011 *Real-time Rainfall Drainage Tracker: A real-time visualization interface in IFIS for rainfall drainage tracking*
- 2011 *Apps for Science Challenge Entry: Get Inspired – A communication interface between academic platforms (Science Direct and Toxuus) 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 and personal websites for companies and organization from various industrial sectors

## AWARDS & RECOGNITION

- 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, Iowa Flood Center*
- 2019 **Preparedness, Technology and Innovation Award**, South Dakota Emergency Management Association (SDEMA)  
Project: *Big Sioux River Flood Information System*
- 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 (SDSES)  
Project: *Big Sioux River Flood Information System*
- 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 advisor)*
- 2018 **Innovation Award**, Scientific Visualization Challenge, US Bureau of Reclamation
- 2017 **Top 10 Downloaded Articles**, 2017. Article with title 'Toward the Geoscience Paper of the Future: Best practices for documenting and sharing research from data to software to provenance', (Earth and Space Science) is selected by AGU Publications, Wiley.
- 2017 **Runner-up, Top 10**, AGU Data Visualization Storytelling Competition
- 2017 **2<sup>nd</sup> 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, 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
- 2011 **Nomination**, ICE's Annual Awards-for-Papers Competition – One of the best papers of 2010 published by ICE Publishing (finalist – top 5%)
- 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  
11<sup>th</sup> Annual Graduate Student Symposium, 28-29 February, UGA, Athens, GA
- 2005 **Top 25 Hottest Articles**, January-March 2005. Article with title 'Determination of the relationship between sewage odor and BOD by neural networks', (Env. Mod. & Soft., 20, 7, 2005, p843-850) is selected by Science Direct, Elsevier.
- 2005 **Elected**, Member for Sigma Xi - The Scientific Research Society
- 1997-2003 **Intelligence Olympics**, Semi-finalist [1997, 1998, 2002, 2003]  
Turkey Intelligence Foundation (TZV)
- 2002 **National Graduate Education Exam**, TURKEY  
Ranked in top 0.2% out of 130,000 examinees
- 1996 **National Higher Education Entrance Examination**, TURKEY  
Ranked in top 0.2% out of 1.5 million examinees
- 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 17<sup>th</sup> 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: ‘Database highlights contaminants in private wells’  
*Julia Shanahan, Daily Iowan, July 16, 2019*
- [2] **Interview:** Project: ‘New Homeland Security report on new technologies for alerting public’  
*Erin Jordan, The Gazette, December 18, 2018*
- [3] **Interview:** Project: ‘University of Iowa Hackathon Competition’  
*Julia F. DiGiacomo, The Gazette, October 5, 2018*
- [4] **Interview:** Project: ‘An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin’  
*Erin Jordan, The Gazette, July 18, 2018*
- [5] **Interview:** ‘Iowa Flood Information System – flood damage estimate feature’  
*Kayla James, CBS2/FOX28 News, May 1, 2018*
- [6] **Interview:** ‘Iowa Flood Information System’  
*Kate Hayden, Business Record, innovationIOWA Magazine, April 16, 2018*
- [7] **Interview:** Project: ‘Flood AI: Artificial Intelligence System for Flooding’  
*Todd T. De Voe, EM Weekly, March 2, 2018*
- [8] **Interview:** Project: ‘Flood AI: Artificial Intelligence System for Flooding’  
*Skip Descant, GovTech Magazine, January 10, 2018*
- [9] **Highlight:** Project: ‘Flood AI: Artificial Intelligence System for Flooding’  
*Daily Iowan, KCRG-TV9, Business Record, GovTech Magazine, IFC, IIHR News, COE News, Iowa Now, and more...*

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- [10] **Interview:** ‘New app uses artificial intelligence to give people real live flood data’  
*Ethan Fickau, KCRG-TV9, Dec 19, 2017*
- [11] **Interview:** ‘UI professor develops a Siri for flood information’  
*Sarah Watson, Daily Iowan, Nov 29, 2017*
- [12] **NSF Highlight:** ‘EarthCube 2015 Highlights: Faces of EarthCube – Ibrahim Demir, Informatics’  
*NSF EarthCube, All Hands Meeting, May 27, 2015*
- [13] **Interview:** ‘Iowa Flood Information System displayed at capitol today’  
*O. Kay Henderson, Radio Iowa, March 10, 2015*
- [14] **Interview:** ‘A Model for Turkey: Early Warning System for Flooding’ – (6-page)  
*Turkish National Science Foundation – Science and Technology Magazine, September 2014*
- [15] **Interview:** ‘University of Iowa: Turning a flood of data into flood safety’  
*BlackBerry Academic Spotlight, May 2013*
- [16] **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...*
- [17] **Highlight:** Project: ‘Iowa Water Quality Information System (IWQIS)’  
*College of Engineering News, IIHR News, H<sub>2</sub>O Line, CBS2Iowa, FOX28, Iowa Environmental Focus, Iowa Water Center, Research Buzz*
- [18] **Highlight:** Project: ‘National Flood Information System (FloodCube)’  
*NSF Press Release, Cisco Network News, NYC Media Lab Report*
- [19] **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*
- [20] **Highlight:** Project: ‘Fund-a-Sensor Initiative’  
*ND Stem Network, UI Foundation Press Release, Press Citizen, IowaNow, IIHR News*
- [21] **Highlight:** Other Projects: ‘Innovation in Teaching’, ‘Next Generation Network Applications’, ‘Application Development’, ‘Social Media Analytics for Flood Prediction’, ‘Internet of Things for Disaster Response’ and other group projects  
*COE Features, Press Citizen, IIHR Currents, The Gazette, Google Open Source Blog, IowaNow, ITS News, College of Engineering News, Gigabit KC, and many newspapers and TV stations*
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## PROFESSIONAL ACTIVITIES

### University Service

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-present | 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, IHR      |

### Organization Boards & Committees

|              |   |
|--------------|---|
| 2019-present | Member, IEEE Technical Committee, Earth Science Informatics   |
| 2018-present | 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-present | 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, Geoscience Papers of the Future Initiative, NSF   |
| 2015-present | Co-Chair, NSF EarthCube Standards and Standards Bodies Working Group  |
| 2014-present | Board Member, NSF EarthCube OntoSoft Advisory Board   |
| 2014-2018    | Users Committee, Unidata Program Center, University Corporation for Atmospheric Research (UCAR)                                   |
| 2014-present | Member, Technology and Architecture Standing Committee, NSF EarthCube   |
| 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

|      |   |
|------|---|
| 2020 | Program Committee, ' <i>EnvirVis 2020 - Visualization in Environmental Sciences, EuroVis 2020</i> ', May 25-29, 2020, Norrköping, Sweden. |
| 2020 | Steering Committee, ' <i>14th International Conference on Hydroinformatics</i> ', July 26-30, 2020, Mexico City, Mexico.                  |
| 2020 | Program Committee, ' <i>8th International Conference on Flood Management</i> ', August 18-20, 2020, Iowa City, Iowa, USA.                 |
| 2019 | Chair, ' <i>UIOWA Hackathon</i> ', October 12-13, 2019, Iowa City, Iowa, USA.   |



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- 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, *'1<sup>st</sup> Conference of the AJGS'*, November 12-15, 2018, Tunisia.
- 2018 Chair, *'UIOWA Midwest Big Data Hackathon, UIOWA'*, October 6-7, 2018, Iowa City, Iowa, USA.
- 2018 Steering Committee, *'13th International Conference on Hydroinformatics'*, July 7-13, 2018, Palermo, Italy.
- 2017 Chair, *'UIOWA Midwest Big Data Hackathon, UIOWA'*, September 16-17, 2017, Iowa City, Iowa, USA.
- 2017 Program Committee, *'UIOWA Informatics Symposium'*, February 17-18, 2017, Iowa City, Iowa, USA.
- 2017 Session Chair, "Disaster Management, Recovery, Floods & Climate" Session, *'UIOWA Informatics Symposium'*, February 17-18, 2017, Iowa City, Iowa, USA.
- 2016 Chair, *'UIOWA Midwest Big Data Hackathon, UIOWA'*, October 8-9, 2016, Iowa City, Iowa, USA.
- 2016 Steering Committee, *'12th International Conference on Hydroinformatics'*, August 21-25, 2016, Incheon, South Korea.
- 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'*, 12<sup>th</sup> 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.
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- 2015 Organizing Committee, *'2015 Unidata Users Workshop Data-driven Geoscience: Applications, Opportunities, Trends, and Challenges'*, June 22-25, 2015, Boulder, CO, USA
- 2014 Session Chair, *'HIC 2014 – 11th International Conference on Hydroinformatics'*, August 17-21, 2014, New York, NY, USA
- 2014 Program Committee, *'8th International Congress on Environmental Modelling and Software (iEMSs)'*, June 15-19, 2014, San Diego, CA, USA
- 2013 Session Organizer, *'Future of Hydroinformatics in Access, Visualization, and Analysis of Large-Scale Hydrological Data'*, AGU Fall Meeting, December 9-13, 2013, San Francisco, CA, USA
- 2013 Session Organizer, *'Hydroinformatics in Modeling, Scientific Visualization and Information Communication'*, European Geosciences Union General Assembly 2013, December 7-12, 2013, Vienna, Austria
- 2012 Session Organizer, *'Informatics in Hydrological Modeling and Information Communication'*, AGU Fall Meeting, December 3-7, 2012, San Francisco, CA, USA
- 2012 Session Organizer, *'Designing a Roadmap for Workflow Cyberinfrastructure in the Geosciences: From Big Data to the Long Tail'*, AGU Fall Meeting, December 3-7, 2012, San Francisco, CA, USA
- 2012 Co-Chair, *'EarthCube Community Workshop: Designing A Roadmap for Workflows in Geosciences'*, June 5, 2012, Boulder, CO, USA.
- 2011 Scientific Committee, *'International Symposium on Environmental Protection and Planning: Geographic Information Systems (GIS) and Remote Sensing (RS) Applications (ISEPP)'*, June 28-29, 2011, Gediz University, Izmir, TURKEY
- 2011 Scientific Committee, *'2nd International Conference on Informatics (ICI-2011)'*, April 27-29, 2011, Çanakkale Onsekiz Mart University, Çanakkale, TURKEY
- 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

- 2016-present Member, ESRI Community Maps Program
- 2016-present Member, NVIDIA GPU Educators Program
- 2013-present Member, Microsoft App Builder Program
- 2013-present 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-present Member, BlackBerry Developer Program, Smartphone and Tablet App Development

2011-present Member, Apple Developer Program, iOS and Safari App Development

### Grant/Award Review Panels

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, 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, Smart Water, Springer, 2018-present

Associate Editor, Journal of Hydroinformatics, IWA, 2017-present

Associate Editor, A. Journal of Geosciences, Springer, 2017-2019

Editor, Environmental Modeling and Software, Elsevier, 2015-present

Guest Editor, Special Issue: "Flood Decision Support Systems (FLOODSS)", Water, MDPI, 2020-2021

Guest Editor, Special Issue: " Application of Machine Learning and Artificial Intelligence in Surface Flow Simulation", Applied Sciences, MDPI, 2020-2021

### Reviewer for Journals

- Bulletin of American Meteorological Soc., AMS
- CLEAN – Soil, Air, Water, Wiley
- Computers, MDPI
- Computers and Geosciences, Elsevier
- Computers & Industrial Engineering, Elsevier
- Ecological Informatics, Elsevier
- Earth and Space Science, AGU
- Earth Science Informatics, Springer
- 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
- Geosciences, MDPI
- Hydrology and Earth System Sciences, EGU
- Journal of Atmospheric and Oceanic Tech., AMS
- Journal of Computing in Civil Engineering, ASCE
- Journal of Environmental Management, Elsevier
- Journal of American Water Res. Assoc., Wiley
- Journal of Flood Risk Management, Wiley
- Journal of Hydroinformatics, IWA
- Journal of Hydrologic Engineering, ASCE
- Journal of Hydrology, Elsevier
- Journal of Hydrometeorology, AMS
- J. of Inf. & Telecommunication, Taylor & Francis
- Journal of Membrane Science, Elsevier
- Journal of Visualized Experiments
- Natural Hazards and Earth System Sci., EGU
- Ocean & Coastal Management, Elsevier
- Pedosphere, Elsevier

- Informatics, MDPI
- Information, MDPI
- Int. Journal of Comp. and App., Taylor & Francis
- Int. Journal of Disaster Risk Reduction, Elsevier
- Int. Journal of Disaster Risk Science, Springer
- Int. J. of Hydrology Sci and Tech, Inderscience
- Int. Journal of River Basin Man., Taylor & Francis
- PLOS One, PLOS
- Sustainable Cities and Society, Elsevier
- Smart Water, Springer
- Symmetry, MDPI
- Water, MDPI
- Water Resources Research, AGU
- Water Science and Engineering, Elsevier

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### Reviewer for Conferences

- AGU Fall Meeting, 2011-2014, San Francisco, CA, USA
- Annual James F. Jakobsen Graduate Conference, 2012, Iowa City, IA, USA
- EnvirVis - Visualization in Environmental Sciences, EuroVis 2015, 2016, 2019, 2020
- Georgia Junior Science & Humanities Symposium, 2010, 2011, Athens, GA, USA
- GIS Day at Kansas University, 2019, Lawrence, KS, USA
- IAHR World Congress, 2019, Panama.
- International Conference on Flood Management - ICFM, 2020, 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
- IWA World Water Congress & Exhibition, IWA, 2010, 2011, 2012, 2014, 2020

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### Professional Society Memberships

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