Peer-Reviewed Publications

2022

Abolhassani, B, **J Tadrous**, A Eryilmaz, and E Yeh (2022) "Fresh Caching of Dynamic Content Over the Wireless Edge," *IEEE/ACM Transactions on Networking,* January, doi: 10.1109/TNET.2022.3170245.

Abolhassani, B, **J Tadrous,** and A Eryilmaz (2022)"Single vs Distributed Edge Caching for Dynamic Content," *IEEE/ACM Transactions on Networking,* April, pp 669–682.

An, K and **Y Zhang** (2022) "LPViT: A Transformer Based Model for PCB Image Classification and Defect Detection," *IEEE Access,* April, pp 42542–42553.

Aung, MT, **K Shimabuku**, N Soares-Quinete, JP Kearns (2022) "Leveraging DOM UV Absorbance and Fluorescence to Accurately Predict and Monitor Short-chain PFAS Removal by Fixed-bed Carbon Adsorbers," *Water Research,* April, doi: 10.1016/j.watres.2022.118146.

Coviello, G, A Florio, G Avitabile, **C Talarico**, and JM Roveda (2022) "Distributed Full Synchronized System for Global Health Monitoring based on FLSA," *IEEE Transactions on Biomedical Circuits and Systems,* May, doi: 10.1109/TBCAS.2022.3173586.

Job, A, S Stratton, C Umhey, **KA Hoo**, S Wettstein (2022) "Using artificial neural networks to estimate xylose conversion and furfural yield for autocatalytic dehydration reactions," *American Chemical Society Sustainable Chemistry & Engineering*, **10**, No. 1, January, pp 177-181.

Kearns, J, A Kennedy, and **K Shimabuku** (2022) "Models for Predicting Organic Micropollutant Breakthrough in Carbon Adsorbers Based on Water Quality, Adsorbate Properties, and Rapid Small-scale Column Tests," *AWWA Water Science,* April, doi: 10.1002/aws2.1281.

Mollik, T, S Kennedy, MREU Shougat, X Li, **T Fitzgerald**, S Echols, Nick K, L Silverberg, and E Perkins (2022) "Discrete Element Method Simulator for Joint Dynamics: A Case Study Using a Red-tailed Hawk's Hallux Digit," *Multibody System Dynamics,* June, doi: 10.1007/s11044-022-09828-x.

Sprint, G, DJ Cook, M Schmitter-Edgecombe, and LB Holder (2022) "Multimodal Fusion of Smart Home and Text-Based Behavior Markers for Clinical Assessment Prediction," *ACM Transactions on Computing for Healthcare,* June, doi: 10.1145/3531231.

VanDam, M, L Thompson, E Wilson-Fowler, S Campanella, K Wolfenstein, and **P De Palma** (2022) "Conversation Initiation of Mothers, Fathers, and Toddlers in their Natural Home Environment," *Computer Speech & Language,* May, doi: 10.1016/j.csl.2021.101338.

Zhang, H, Z Li, H Zhao, Z Li, and **Y Zhang** (2022) "Attentive Octave Convolutional Capsule Network for Medical Image Classification," *Applied Sciences,* March, doi: 10.3390/app12052634.

2021

Bentley, M, M Solomona, B Marten, **K Shimabuku**, and S Cook (2021) "Evaluating Landfill Leachate Treatment by Organic Municipal Solid Waste-derived Biochar," *Environmental Science: Water Research and Technology,* September, doi: 10.1039/D1EW00376C.

Names in **boldface** refer to SEAS faculty members. Names that are <u>underlined</u> refer to SEAS students.

Coviello, G, G Avitabile, A Florio, **C Talarico**, and JM Wang-Roveda (2021) "A Novel Low-Power Time Synchronization Algorithm Based on a Fractional Approach for Wireless Body Area Networks," *IEEE Access,* September, pp 134916-134928.

Olivares, D, C Hundhausen, and N Ray (2022) "Designing IDE Interventions to Promote Social Interaction and Improved Programming Outcomes in Early Computing Courses," *ACM Transactions on Computing Education,* March, doi: 10.1145/3453165.

Olson, SM, **M Muszynski**, YMA Hashash, and C Phillips (2021) "Mitigating Lateral Spreading Forces on Large Foundations using Ground Deflection Walls," *ASCE Journal of Geotechnical and Geoenvironmental Engineering,* November, doi: 10.1061/(ASCE)GT.1943-5606.0002644.

Song, G, D Huang, and **Y Zhang** (2021) "A Hybrid Model for Monolingual and Multilingual Toxic Comment Detection," *Tehnicki Vjesnik-Technical Gazette,* August, pp 1667-1673.

Sprint, G (2021) "Teaching Test-driven Development of Algorithms behind Data Science Library APIs," *Journal of Computing Sciences in Colleges,* October, pp 18–27.

Zhou, S and **Y Zhang** (2021) "DATLMedQA: A Data Augmentation and Transfer Learning Based Solution for Medical Question Answering," *Applied Science,* November, doi: 10.3390/app112311251.

Peer-Reviewed Conference Proceedings

2022

Youssef, A, **J Tadrous**, S Hosny, M Nafie (2022) "Joint Content Valuations and Proactive Caching for Content Distribution Networks," *IEEE 19th Annual Consumer Communications & Networking Conference (CCNC),* virtual, January 8–11, pp 100–105.

2021

Abolhassani, B, **J Tadrous**, and A Eryilmaz (2021) "Optimal Load-Splitting and Distributed-Caching for Dynamic Content," *19th International Symposium on Modeling and Optimization in Mobile, Ad hoc, and Wireless Networks (WiOpt),* virtual, October 18–21, doi: 10.23919/WiOpt52861.2021.9589298.

Abolhasani, B, **J Tadrous**, A Eryilmaz, and E Yeh (2021) "Fresh Caching for Dynamic Content," *IEEE International Conference on Computer Communications INFOCOM 2021,* virtual, May 10–13, doi: 10.1109/INFOCOM42981.2021.9488731.

Coviello, G, G Avitabile, A Florio, **C Talarico**, and J Roveda (2021) "Relationship between Timer Resolution and Synchronization Message Repetition Frequency in a Synchronized Wireless Sensor Network," *International Conference on Computer Engineering and Artificial Intelligence (ICCEAI),* Shanghai, China, August 27–29, pp 535–538.

Coviello, G, G Avitabile, **C Talarico**, J Roveda, and A Florio (2021) "A Fractional Approach to Time Synchronization in Wireless Body Area Networks," *IEEE 64th Midwest Symposium on Circuits and Systems (MWSCAS),* East Lansing, MI, August 8–11, pp 933–936.

Dorie, B (2021) "Figuring 'It' Out: Informational Literacy for Problem Scoping in Engineering Design (Theory)," *ASEE Annual Conference & Exposition,* virtual, July 26–29, pp 1–16.

Job, A, S Stratton, C Umhley, J Romo, **KA Hoo,** S Wettstein (2021) "Using artificial neural networks to estimate xylose conversion and furfural yields in autocatalytic, organic/aqueous solvent systems," *ACS: Applications of Artificial Intelligence, Machine Learning & Data Analytics in Environmental Science & Engineering*, April.

Schultz, J and **M Muszynski** (2021) "Small-Scale Testing for Feasibility of Rubblized Concrete Foundations," *IABSE Congress Ghent - Structural Engineering for Future Societal Needs,* Ghent, Belgium, September 22–24, pp 159–165.

Books & Book Chapters

2022

Saberi, A, AA Stoorvogel, **M Zhang**, and P Sannuti (2022) *Synchronization of Multi-Agent Systems in the Presence of Disturbances and Delays,* Birkhäuser Cham, ISBN: 978-3-030-88148-1.

2021

Shimabuku, K and RS Summers (2022) "17 - Simple Modeling Approaches to Monitor and Predict Organic Contaminant Adsorption by Biochar." In D Mohan, CU Pittman, TE Mlsna (Ed), *Sustainable Biochar for Water and Wastewater Treatment*, Elsevier, ISBN: 978-0-12-822225-6, pp 597–610.

Tadrous, J, A Eryilmaz, and H El-Gamal (2021) "14 - Pricing-aided Proactive Caching for Mobile Services." In W Chen, HV Poor (Eds) *Edge Caching for Mobile Networks,* Institution of Engineering & Technology, ISBN: 978-1-83-953122-4, pp 405–438.

Conference Presentations (contributed, invited, abstracts)

2022

Baumgardner, M, N Frojelin, R Beckstead Bahr, A Graves, N Stanton, K Nolan, and **K Shimabuku** (2022) "TLUD Production of Bonechar for the Removal of Fluoride from Drinking Water," Western States Section of the Combustion Institute (WSSCI) Spring Technical Meeting, Stanford, CA, March 21-22.

Kutkut, A, M Ayoobi, V Akkerman, and **M Baumgardner** (2022) "Stable Versus Unstable Premixed Methane/Air Combustion in Micro-channels," Spring Technical Meeting of the Central States Section of the Combustion Institute, Detroit, MI, May 15–17.

Shimabuku, K, MT Aung, N Soares-Quinete, JP Kearns (2022) "Using UV and Fluorescence Spectroscopy to Monitor and Predicting PFAS, MIB, and Emerging Contaminant Removal by Activated Carbon," AWWA-PNWS Annual Conference, Tacoma, WA, April 27-29.

Shimabuku, K, T Henrie (2022) "The Impact of Bromide on Chlorine Decay and Disinfection Byproduct Formation," AWWA-PNWS Annual Conference, Tacoma, WA, April 27-29.

2021

Dorie, B (2021) "Shifted Perspectives: Reflective Analysis During an Engineering Writing Activity," First-Year Engineering Experience Conference, virtual, August 9–10, 2021.

Sprint, G (2021) "Teaching Test-driven Development of Algorithms behind Data Science Library APIs," Consortium for Computing Sciences in Colleges (CCSC) Northwest Conference, Lacey, WA, October 9.

Woodside, J, D Hurwitz, K Chang, and **R Young** (2021) "Bicycle Rolling Safety Laws: State of the Practice Review," International Annual Meeting of the Institute of Traffic Engineers, Portland, OR, July 18–21.

Workshops/Short Course/Seminars

Bowers, S (2021) Co-Organizer and Session Lead: T7 Workshop, Provenance Week, virtual, July 22.

Young, R (2021) "Talking about Diversity, Equity and Inclusion (DEI) with Civil and Environmental Engineering Students," Center for Infrastructure Transportation and Education (CIT-E), virtual, August 10–11.

Honors & Awards

Shimabuku, K (2022) CREATE Award for Teaching, Gonzaga University Office of Sustainability.

U.S. News & World Report Ranking 2021-2022: #22 Best Undergraduate Engineering Programs *at schools where a doctorate is not offered. This is up one spot from 2020-21, and makes our sixth-straight year in the top 10%.

Funded Research

2022 New Externally-Funded Research

Ferro, P (2022) *Investigation of Epoxy Segregation To C Fiber In Acrylate-Matrix Thermosetting C Fiber Composites,* Air Force Research Library - Defense University Research Instrumentation Program. Total: $53,095/12 months.

2021 New Externally-Funded Research

Niezgoda, S (2021) *Evaluation, Design and Adaptive Management of Beaver Dam Analog Complex for Retaining Sediment and Nutrients in Hangman Creek Watershed,* The Lands Council, Co-PIs: Dave Cleary and Betsy Bancroft. Total: $33,154/36 months.

Niezgoda, S (2021) *Evaluation, Design and Adaptive Management of Beaver Dam Analog Complex for Retaining Sediment and Nutrients in Thompson Creek*, The Lands Council, Co-PIs: Dave Cleary and Betsy Bancroft. Total: $59,644/36 months.

Ongoing Externally-Funded Research

Fitzgerald, T (2020) *Flexible Reservoir Computing Tensegrity Robots,* Defense Advanced Research Projects Agency (DARPA). PI: Edmon Perkins, North Carolina State University. Total: $43,263/36 months (year 2).

Khare, H (2020) *MRI: Acquisition of Atomic Force Microscope,* National Science Foundation. Total: $267,718/36 months (year 3).

Schultz, J (2020) *Experimental Investigation of Glass Failure Prediction Model for Point Loads,* Murdock Charitable Trust. Total: $15,000/29 months (year 2).

Young, R (2020) *Evaluation of the Idaho (Bicycle) Stop Laws in the Pacific Northwest,* PacTrans Region 10 University Transportation Center. PI: Yinhai Wang, University of Washington. Total: $15,000/23 months (year 2).

Funded within Gonzaga University

Muszynski, M, and **J Schultz** (2021) *Alternative Foundations for Low Income Housing,* Gonzaga University Research Council award.

Sprint, G (2021) *Ecological Momentary Assessment and Wearable Date for Online Recovery Analysis,* Gonzaga University Research Council award.

Funded within the School of Engineering & Applied Science

Crandall, A and A Poblette (2021) *HazARD: An Augmented Reality Fall Prevention System,* Robert W Gillette Innovation Challenge grant.

De Palma, P and J Espinoza (2021) *Computational Investigations of Recorded Speech,* Robert W Gillette Innovation Challenge grant.

Dorie, B and B Baker (2021) *Impact of Wildfire Emissions on the Inland Northwest,* Robert W Gillette Innovation Challenge grant.

Shimabuku, K, **M Baumgardner**, and N Frojelin (2021) *Optimizing biochar production through semi-gasification for the removal of Fluoride from drinking water,* SEAS SEED Challenge Fund.

Shimabuku, K, M Baumgardner, and R Bahr (2021) *Optimizing biochar production through semi-gasification for the removal of PFAS from drinking water,* SEAS SEED Challenge Fund.

Tadrous, J and J Biswas-Diener (2021) *Dynamic Proactive Caching for Multi-user Networks,* Robert W Gillette Innovation Challenge grant.

Other Scholarly Activity

Ohara, N, A Neupane, **R Young**, and AR Campos (2021) "Characterization of Blow Over Risk in the Wyoming Highway System" (Tech Report), Wyoming Department of Transportation.

Chen, T: Faculty Advisor, American Society of Mechanical Engineers student section, 2012–present.

Crandall, A, BL Thomas, and B Minor (2022) *Sustainability: Challenges in Engineering Smart Environments* (Guest Editors for special issue). Journal of Sustainability, MDPI publisher, ISSN 2071-1050.

Crandall, A: SEAS Representative, Faculty Senate and Academic Committee, September 2021 - present

Ganzerli, S: Faculty Advisor, Society of Women Engineers student chapter, 2017-present.

Muszynski, M: Regional Governor, Order of the Engineer, 2020-present.

Niezgoda, S: Faculty Advisor, American Society of Civil Engineers student section, 2018-present**.**

Niezgoda, S: Faculty Advisor, Order of the Engineer - Link of the Engineer #279, 2018-present.

Schultz, J: Faculty Advisor, Tau Beta Pi - Washington Delta Chapter, September 2016-present.

Shimabuku, K: Faculty Advisor, Gonzaga Sustainable Energy (GSE), September 2021-present.

Shimabuku, K: Faculty Advisor, Zags Without Borders, September 2020-present.

Tadrous, J: Associate Editor, *Institute of Electrical and Electronic Engineers Access,* April 2019– present.

Tadrous, J: Faculty Advisor, Institute of Electrical and Electronic Engineers student chapter, 2019–present.

Yi, J: Editor, *J Digital Signal Processing*, 2013–present.

Young, R: Associate Editor, ASCE Journal on Civil Engineering Education, 2019-present

Young, R: Board Member, City of Spokane's Bicycle Advisory Board and Planning Commission's Transportation Subcommittee

Young, R: Member, Technical Advisory Committee, Spokane Regional Transportation Council (SRTC), June 2020-present.

Accomplishments & Awards: Students

Gonzaga RoboSub, a student-directed project under the GU Robotics Club, competed in the international RoboNation RoboSub competition in August. The Sensor Optimization Team placed 5th in their division.

Gonzaga's chapter of the engineering honor society, Tau Beta Pi, inducted 19 members: 7 CE, 5 ECE, 7 ME.

SEAS Civil Engineering students who presented at the 2022 Spokane Intercollegiate Research Conference (April 23 at Whitworth University) are as follows:
· Drew Barlow (CE'22), Alan Champagne (CS'23), Jem Pedicord (CS'23) & Sam Albers (CE'22), *Optimization Using Fully Stressed Design*.
· Kyle Nolan (CE'22) & Nicole Stanton (CE'22), *Regenerating Bonechar Filters for Fluoride Removal in Low-Income Communities* (poster). Faculty Advisor: **K Shimabuku**

SEAS Computer Science students who presented at the 2022 Spokane Intercollegiate Research Conference (April 23 at Whitworth University) are as follows:
· Hannah Cole (CT'22), *Killer Whale Population Dynamics*. Faculty Advisors: **P De Palma**, R Cangelosi
· Leon Garcia-Camargo (CS'23), *Topological Data Analysis*.
· Ángela George (CT'22), *La Frontera Within*.
· Katie Imhof (CS'24), Jakok Kubicki (CS'23), and Adam Lee (CS'22), *Collaborative Community Building Tool for Novice Computer Science Students*. Faculty Advisor: **D Olivares**
· Ben Puryear (CS'24), *Github Copilot: The Future of AI Assisted Programming*. Faculty Advisor: **G Sprint**
· Xiwen Zhong (CT'25), *Hydrogen Embrittlement Testing of 304 Stainless Steel after >2 years of Gaseous Hydrogen Exposure* (poster). Faculty Advisor: **P Ferro**
· Caleb Lefcort (CS'24) and Theodore Ferro (CS'25), *Hydrogen Embrittlement Testing of CPT Dogbones after >2 years of Gaseous Hydrogen Exposure* (poster). Faculty Advisor: **P Ferro**
· Alan Poblette (CS'22) & Kole Davis (CT'24), *HazARd Real Time Tripping Hazard Augmented Reality System User Experience Prototyping*. Faculty Advisor: **A Crandall**
Jesus Espinoza (CS,'23), *Child Directed Speech*. Faculty Advisor: **P De Palma**

SEAS Mechanical Engineering students who presented at the 2022 Spokane Intercollegiate Research Conference (April 23 at Whitworth University) are as follows:
· Jackson Swets (ME'25), *Hydrogen Embrittlement Testing of 304 Stainless Steel after >2 years of Gaseous Hydrogen Exposure* (poster). Faculty Advisor: **P Ferro**
· Yuchen Huang (ME'22), Emily Andresen (ME'22), Avery Steward (ME'22) & Michael Wiest

(ME'22), *Three-dimensional Motion Capture of Free-Flying Insects* (poster). Faculty Advisor: **T Fitzgerald**

ASCE Student Chapter team placed Second in the Environmental Engineering Competition, 2022 Pacific Northwest ASCE Student Symposium, virtual, April 27-29. Faculty Advisor: **K Shimabuku**

Bresnan, Alex J (EE'22) received the Jerome Nadal, S.J., Returning Adult Award at Academic Convocation 2022

Campos, Antonio Roman (CE'22) presented his regional-prize-winning technical paper on civil engineering ethical responsibilities during the COVID-19 epidemic at the ASCE Region 8 student conference, where it won the region's top prize and advanced to the national finals.

Campos, Antonio Roman (CE'22) selected as a Hispanic Scholarship Foundation Scholar and award finalist.

Chock, Christopher (EE, '23) and Nicholas Linthacum (CpE, '23) were inducted into the Jesuit Honor Society, Alpha Sigma Nu.

Hernandez, Kayla (CE'22) awarded a scholarship from the Renton Regional Community Foundation in partnership with Osborn Consulting. This the first year of this scholarship for a BIPOC student who has demonstrated a commitment to developing public infrastructure in the Puget Sound Region.

Ng, Fisher (ME'22) received the Mathematics Carsrud Award at Gonzaga's Academic Convocation.

Ng, Fisher (ME'22) received the SEAS Student of the Year award at Gonzaga's Academic Convocation.

Poblette, Alan (CS'23) received the Jack McElroy Research Student Scholar award for *HazARD: An Augmented Reality Fall Prevention System*. Total: $4200/12 months. Faculty Advisor: **A Crandall**

Stevenson, Audrey (CE'23) received the Third Year Class Award at Gonzaga's Academic Convocation.

Yalan, Andres placed Third in the Student Paper Competition with "The Code of Ethics Changes and its Impacts on Civil Engineering," 2022 Pacific Northwest ASCE Student Symposium, virtual, April 27-29.

Bogdan, Drew (CS'24), Kevin Dang (CS'23), Kole Davis (CS'24), and Vincent Do (CS'23) placed First Overall, Lower Division at the Spokane Mayor's Cup Capture the Flag Cyber Security Competition, Eastern Washington University, February 5, 2022.

Higa, Ethan (CpE'22) team placed Third Overall, Upper Division at the Spokane Mayor's Cup Capture the Flag Cyber Security Competition, Eastern Washington University, February 5, 2022.