

Ganapati Bhat

EME 506, 335 NE Spokane St, Pullman, WA, USA 99164

ganapati.bhat@wsu.edu ◇ <https://eecs.wsu.edu/~gbhat/> ◇ [Google Scholar](#)

Last updated: December 17, 2023

EDUCATION

Ph.D., Computer Engineering Arizona State University, Tempe, AZ Thesis Title: Design, Optimization, and Applications of Wearable IoT Devices	Aug. 2014 – Aug. 2020
B.Tech., Electronics & Communication Engineering Indian Institute of Technology (ISM), Dhanbad, India	July 2008 – May 2012

EXPERIENCE

Raymond and Beverly Lorenz Distinguished Assistant Professor School of EECS, Washington State University	July 2023 – present
Assistant Professor School of EECS, Washington State University	August 2020 – present
Graduate Research Associate Arizona State University	Aug. 2014 – July 2020
Senior Software Engineer Samsung R&D Institute, Bengaluru, India	April 2014 – July 2014
Software Engineer Samsung R&D Institute, Bengaluru, India	July 2012 – March 2014

RESEARCH INTERESTS

Wearable IoT devices, heterogeneous mobile devices, energy harvesting and management, flexible hybrid electronics, health monitoring

AWARDS AND HONORS

- NSF CAREER Award	2023
- School of EECS Junior Faculty Award	2023
- DARPA Riser Award	2022
- ACM Outstanding Ph.D. Dissertation Award in Electronic Design Automation	2022
- Best paper award, ACM Transactions on Design Automation of Electronic Systems	2021
- Best paper award, CASES, Embedded Systems Week	2019
- Ferdinand A. Stanchi Fellowship, Arizona State University	2019
- ASU Graduate and Professional Student Association Outstanding Research & Mentor Awards	2019

RESEARCH GRANTS

A. Funded – In progress

1. **Ganapati Bhat** (Sole PI), “CAREER: Towards Self-Sustainable Wearable Systems Design for Mobile Health Applications.” National Science Foundation, \$577,202, 7/1/2023 – 6/30/2028.

B. Funded – Completed

1. **Ganapati Bhat** (Sole PI), “Transforming Digital Healthcare with Self-Powered Wearable Devices.” WSU Office of Research, New Faculty Seed Grant, \$25,000, 5/17/2021 – 8/15/2022.

C. Pending

1. Afsaneh Doryab (Univ. of Virginia PI), Jennifer MacCormack (Univ. of Virginia), Jennifer Penberthy (Univ. of Virginia), **Ganapati Bhat** (WSU PI), “Modeling and Characterizing Heterogeneity in Biobehavioral Markers Linking Depressive Symptoms and Cardiovascular Risk in Postmenopausal Women”, National Institutes of Health R21, \$418,375, 4/1/2024 – 3/31/2026.

PUBLICATIONS

Graduate student authors are indicated by a superscript dagger symbol, i.e., †. Corresponding author in publications with multiple supervisors is indicated by a double dagger, i.e., ‡. When available, DOIs (referring to the official published version) are provided. All conference and journal papers are peer reviewed, except for those annotated with “invited” or “special sessions”.

Patents

- IP1 Suat Gumussoy, **Ganapati Bhat**, Umit Y. Ogras. “Systems and Methods for Power-Temperature Stability and Safety Analysis for Multiprocessor Systems.” (Provisional Patent)

Book Chapters

- B1 **Ganapati Bhat**, Dina Hussein[†], and Nuzhat Yamin[†], “Robust Machine Learning for Low-Power Wearable Devices: Challenges and Opportunities,” *Embedded Machine Learning for Cyber-Physical, IoT, and Edge Computing: Use Cases and Emerging Challenges*, pp. 45–71, 2023.
- B2 Umit Ogras, Ujjwal Gupta, Jaehyun Park, and **Ganapati Bhat**, “Designing Wearable Systems-on-Polymer Using Flexible Hybrid Electronics,” in *Printed Electronics: Technologies, Applications and Challenges*, Nova Science Publishers, Inc., 2017, pp. 127–154.

Journal Articles

- J1 Dina Hussein[†] and **Ganapati Bhat**, “CIM: A Novel Clustering-Based Energy-Efficient Data Imputation Method for Human Activity Recognition,” *ACM Transactions on Embedded Computing Systems (TECS)*, vol. 22, no. 5s, pp. 1–26, 2023. DOI: [10.1145/3609111](https://doi.org/10.1145/3609111).
- J2 Dina Hussein[†] and **Ganapati Bhat**, “SensorGAN: A Novel Data Recovery Approach for Wearable Human Activity Recognition,” *ACM Trans. Embed. Comput. Syst.*, Jul. 2023, Accepted, in press. DOI: [10.1145/3609425](https://doi.org/10.1145/3609425).
- J3 Nuzhat Yamin[†] and **Ganapati Bhat**, “Uncertainty-Aware Energy Harvest Prediction and Management for IoT Devices,” *ACM Trans. Des. Autom. Electron. Syst.*, Jun. 2023, Just Accepted. DOI: [10.1145/3606372](https://doi.org/10.1145/3606372).
- J4 Sizhe An, **Ganapati Bhat**, Suat Gumussoy, and Umit Ogras, “Transfer Learning for Human Activity Recognition Using Representational Analysis of Neural Networks,” *ACM Trans. Comput. Healthcare*, vol. 4, no. 1, pp. 1–21, Feb. 2023. DOI: [10.1145/3563948](https://doi.org/10.1145/3563948).
- J5 Nuzhat Yamin[†] and **Ganapati Bhat**, “Near-Optimal Energy Management for Energy Harvesting IoT Devices Using Imitation Learning,” *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 41, no. 11, pp. 4551–4562, 2022. DOI: [10.1109/TCAD.2022.3198909](https://doi.org/10.1109/TCAD.2022.3198909).

- J6 Ranadeep Deb, Sizhe An, **Ganapati Bhat**, Holly Shill, and Umit Y Ogras, "A Systematic Survey of Research Trends in Technology Usage for Parkinson's Disease," *Sensors*, vol. 22, no. 15, p. 5491, 2022.
- J7 Yigit Tuncel, **Ganapati Bhat**, Jaehyun Park, and Umit Ogras, "ECO: Enabling Energy-Neutral IoT Devices through Runtime Allocation of Harvested Energy," *IEEE Internet of Things Journal*, vol. 9, no. 7, pp. 4833–4848, 2021. DOI: [10.1109/JIOT.2021.3106283](https://doi.org/10.1109/JIOT.2021.3106283).
- J8 Sizhe An, Yigit Tuncel, Toygun Basaklar, Gokul K. Krishnakumar, **Ganapati Bhat**, and Umit Y. Ogras, "MGait: Model-Based Gait Analysis Using Wearable Bend and Inertial Sensors," *ACM Trans. Internet Things*, vol. 3, no. 1, 2021. DOI: [10.1145/3485434](https://doi.org/10.1145/3485434).
- J9 **Ganapati Bhat**, Sumit K Mandal, Sai T Manchukonda, Sai V Vadlamudi, Ayushi Agarwal, Jun Wang, and Umit Y Ogras, "Per-Core Power Modeling for Heterogenous SoCs," *Electronics*, vol. 10, no. 19, p. 2428, 2021. DOI: [10.3390/electronics10192428](https://doi.org/10.3390/electronics10192428).
- J10 **Ganapati Bhat**, Ujjwal Gupta, Yigit Tuncel, Fatih Karabacak, Sule Ozev, and Umit Y Ogras, "Self-Powered Wearable IoT Devices for Health and Activity Monitoring," *Foundations and Trends® in Electronic Design Automation*, vol. 13, no. 3, pp. 145–269, 2020. DOI: [10.1561/10000000056](https://doi.org/10.1561/10000000056).
- J11 **Ganapati Bhat**, Nicholas Tran, Holly Shill, and Umit Y Ogras, "w-HAR: An Activity Recognition Dataset and Framework Using Low-Power Wearable Devices," *Sensors*, vol. 20, no. 18, p. 5356, 2020. DOI: [10.3390/s20185356](https://doi.org/10.3390/s20185356).
- J12 Yigit Tuncel, Sizhe An, **Ganapati Bhat**, Naga Raja, Hyung Gyu Lee, and Umit Ogras, "Voltage-Frequency Domain Optimization for Energy-Neutral Wearable Health Devices," *Sensors*, vol. 20, no. 18, p. 5255, 2020. DOI: [10.3390/s20185255](https://doi.org/10.3390/s20185255).
- J13 Sumit K Mandal, **Ganapati Bhat**, Janardhan Rao Doppa, Partha Pratim Pande, and Umit Y Ogras, "An Energy-Aware Online Learning Framework for Resource Management in Heterogeneous Platforms," *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, vol. 25, no. 3, pp. 1–26, 2020. DOI: [10.1145/3386359](https://doi.org/10.1145/3386359). [Best Paper Award]
- J14 **Ganapati Bhat**, Suat Gumussoy, and Umit Y Ogras, "Analysis and Control of Power-Temperature Dynamics in Heterogeneous Multiprocessors," *IEEE Transactions on Control Systems Technology*, vol. 29, no. 1, pp. 329–341, 2020. DOI: [10.1109/TCST.2020.2974421](https://doi.org/10.1109/TCST.2020.2974421).
- J15 Jaehyun Park, **Ganapati Bhat**, Anish Nk, Cemil S Geyik, Umit Y Ogras, and Hyung Gyu Lee, "Energy per Operation Optimization for Energy-Harvesting Wearable IoT Devices," *Sensors*, vol. 20, no. 3, p. 764, 2020. DOI: [10.3390/s20030764](https://doi.org/10.3390/s20030764).
- J16 **Ganapati Bhat**, Hang Gao, Sumit K Mandal, Umit Y Ogras, and Sule Ozev, "Determining Mechanical Stress Testing Parameters for FHE Designs With Low Computational Overhead," *IEEE Design & Test*, vol. 37, no. 4, pp. 35–41, 2020. DOI: [10.1109/MDAT.2020.2968263](https://doi.org/10.1109/MDAT.2020.2968263).
- J17 **Ganapati Bhat**, Yigit Tuncel, Sizhe An, Hyung Gyu Lee, and Umit Y Ogras, "An Ultra-Low Energy Human Activity Recognition Accelerator for Wearable Health Applications," *ACM Transactions on Embedded Computing Systems (TECS)*, vol. 18, no. 5s, pp. 1–22, 2019, **Best Paper Award**. DOI: [10.1145/3358175](https://doi.org/10.1145/3358175). [Best Paper Award]
- J18 **Ganapati Bhat**, Ranadeep Deb, and Umit Y Ogras, "OpenHealth: Open-Source Platform for Wearable Health Monitoring," *IEEE Design & Test*, vol. 36, no. 5, pp. 27–34, 2019. DOI: [10.1109/MDAT.2019.2906110](https://doi.org/10.1109/MDAT.2019.2906110).
- J19 **Sumit K Mandal**, Ganapati Bhat, Chetan Arvind Patil, Janardhan Rao Doppa, Partha Pratim Pande, and Umit Y Ogras, "Dynamic Resource Management of Heterogeneous Mobile Platforms via Imitation Learning," *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, vol. 27, no. 12, pp. 2842–2854, 2019. DOI: [10.1109/TVLSI.2019.2926106](https://doi.org/10.1109/TVLSI.2019.2926106).

- J20 Doohwang Chang, **Ganapati Bhat**, Umit Ogras, Bertan Bakkaloglu, and Sule Ozev, "Detection Mechanisms for Unauthorized Wireless Transmissions," *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, vol. 23, no. 6, pp. 1–21, 2018. DOI: [10.1145/3241046](https://doi.org/10.1145/3241046).
- J21 **Ganapati Bhat**, Gaurav Singla, Ali K Unver, and Umit Y Ogras, "Algorithmic Optimization of Thermal and Power Management for Heterogeneous Mobile Platforms," *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, vol. 26, no. 3, pp. 544–557, 2017. DOI: [10.1109/TVLSI.2017.2770163](https://doi.org/10.1109/TVLSI.2017.2770163).
- J22 **Ganapati Bhat**, Suat Gumussoy, and Umit Y Ogras, "Power-Temperature Stability and Safety Analysis for Multiprocessor Systems," *ACM Transactions on Embedded Computing Systems (TECS)*, vol. 16, no. 5s, pp. 1–19, 2017. DOI: [10.1145/3126567](https://doi.org/10.1145/3126567).
- J23 Ujjwal Gupta, Chetan Arvind Patil, **Ganapati Bhat**, Prabhat Mishra, and Umit Y Ogras, "DyPO: Dynamic Pareto-Optimal Configuration Selection for Heterogeneous MpSoCs," *ACM Transactions on Embedded Computing Systems (TECS)*, vol. 16, no. 5s, pp. 1–20, 2017. DOI: [10.1145/3126530](https://doi.org/10.1145/3126530).

Conference Papers

- C1 Dina Hussein[†], Taha Belkhouja, **Ganapati Bhat**, and Janardhan Rao Doppa, "Energy-Efficient Missing Data Recovery in Wearable Devices: A Novel Search-Based Approach," in *2023 IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED)*, 2023, pp. 1–6. DOI: [10.1109/ISLPED58423.2023.10244309](https://doi.org/10.1109/ISLPED58423.2023.10244309).
- C2 Dina Hussein[†], Taha Belkhouja, **Ganapati Bhat**, and Janardhan Rao Doppa, "Reliable Machine Learning for Wearable Activity Monitoring: Novel Algorithms and Theoretical Guarantees," in *Proceedings of the 41st IEEE/ACM International Conference on Computer-Aided Design*, 2022. DOI: [10.1145/3508352.3549430](https://doi.org/10.1145/3508352.3549430).
- C3 Dina Hussein[†], **Ganapati Bhat**[‡], and Janardhan Rao Doppa, "Adaptive Energy Management for Self-Sustainable Wearables in Mobile Health," in *The Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI-22)*, 2022, pp. 11 935–11 944.
- C4 Nuzhat Yamin[†], **Ganapati Bhat**[‡], and Janardhan Rao Doppa, "DIET: A Dynamic Energy Management Approach for Wearable Health Monitoring Devices," in *2022 Design, Automation & Test in Europe Conference & Exhibition (DATE)*, 2022, pp. 1365–1370. DOI: [10.23919/DATE54114.2022.9774553](https://doi.org/10.23919/DATE54114.2022.9774553).
- C5 Dina Hussein[†], Aaryan Jain, and **Ganapati Bhat**, "Robust Human Activity Recognition using Generative Adversarial Imputation Networks," in *2022 Design, Automation & Test in Europe Conference & Exhibition (DATE)*, 2022, pp. 84–87. DOI: [10.23919/DATE54114.2022.9774548](https://doi.org/10.23919/DATE54114.2022.9774548).
- C6 Nuzhat Yamin[†] and **Ganapati Bhat**, "Online Solar Energy Prediction for Energy-Harvesting Internet of Things Devices," in *2021 IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED)*, IEEE, 2021, pp. 1–6. DOI: [10.1109/ISLPED52811.2021.9502504](https://doi.org/10.1109/ISLPED52811.2021.9502504).
- C7 Aryan Deshwal, Syrine Belakaria, **Ganapati Bhat**, Janardhan Rao Doppa, and Partha Pratim Pande, "Learning Pareto-Frontier Resource Management Policies for Heterogeneous SoCs: An Information-Theoretic Approach," in *2021 58th ACM/IEEE Design Automation Conference (DAC)*, 2021, pp. 607–612. DOI: [10.1109/DAC18074.2021.9586283](https://doi.org/10.1109/DAC18074.2021.9586283).
- C8 Yigit Tuncel, **Ganapati Bhat**, and Umit Y Ogras, "Special Session: Physically Flexible Devices for Health and Activity Monitoring: Challenges from Design to Test," in *2020 IEEE 38th VLSI Test Symposium (VTS)*, IEEE, 2020, pp. 1–5. DOI: [10.1109/VTS48691.2020.9107559](https://doi.org/10.1109/VTS48691.2020.9107559).
- C9 **Ganapati Bhat**, Kunal Bagewadi, Hyung Gyu Lee, and Umit Y Ogras, "REAP: Runtime Energy-Accuracy Optimization for Energy Harvesting IoT Devices," in *2019 56th ACM/IEEE Design Automation Conference (DAC)*, 2019, pp. 1–6. DOI: [10.1145/3316781.3317892](https://doi.org/10.1145/3316781.3317892).
- C10 **Ganapati Bhat**, Yigit Tuncel, Sizhe An, and Umit Y. Ogras, "Wearable IoT Devices for Health Monitoring," *TechConnect Briefs*, vol. 2019, pp. 357–360, 2019.

- C11 Anish NK, **Ganapati Bhat**, Jaehyun Park, Hyung Gyu Lee, and Umit Y Ogras, “Sensor-Classifer Co-Optimization for Wearable Human Activity Recognition Applications,” in *2019 IEEE International Conference on Embedded Software and Systems (ICCESS)*, IEEE, 2019, pp. 1–4. DOI: [10.1109 / ICCESS.2019 . 8782506](https://doi.org/10.1109/ICCESS.2019.8782506). [Invited paper]
- C12 **Ganapati Bhat**, Suat Gumussoy, and Umit Y Ogras, “Power and Thermal Analysis of Commercial Mobile Platforms: Experiments and Case Studies,” in *2019 Design, Automation & Test in Europe Conference & Exhibition (DATE)*, IEEE, 2019, pp. 144–149. DOI: [10.23919/DATE.2019.8714831](https://doi.org/10.23919/DATE.2019.8714831). [Special Session]
- C13 Hang Gao, **Ganapati Bhat**, Umit Y Ogras, and Sule Ozev, “Optimized Stress Testing for Flexible Hybrid Electronics Designs,” in *2019 IEEE 37th VLSI Test Symposium (VTS)*, IEEE, 2019, pp. 1–6. DOI: [10.1109/VTS.2019.8758661](https://doi.org/10.1109/VTS.2019.8758661). [Best Paper Candidate]
- C14 **Ganapati Bhat**, Ranadeep Deb, Vatika Vardhan Chaurasia, Holly Shill, and Umit Y Ogras, “Online Human Activity Recognition Using Low-Power Wearable Devices,” in *ACM International Conference on Computer-Aided Design (ICCAD)*, 2018, pp. 1–8. DOI: [10.1145/3240765.3240833](https://doi.org/10.1145/3240765.3240833).
- C15 **Ganapati Bhat**, Sumit K Mandal, Ujjwal Gupta, and Umit Y Ogras, “Online Learning for Adaptive Optimization of Heterogeneous SoCs,” in *Proceedings of the International Conference on Computer-Aided Design*, 2018, pp. 1–6. DOI: [10.1145/3240765.3243489](https://doi.org/10.1145/3240765.3243489). [Special Session]
- C16 Jaehyun Park, **Ganapati Bhat**, Cemil S Geyik, Umit Y Ogras, and Hyung Gyu Lee, “Energy-Optimal Gesture Recognition Using Self-Powered Wearable Devices,” in *2018 IEEE Biomedical Circuits and Systems Conference (BioCAS)*, IEEE, 2018, pp. 1–4. DOI: [10.1109/BIOCAS.2018.8584746](https://doi.org/10.1109/BIOCAS.2018.8584746).
- C17 **Ganapati Bhat**, Jaehyun Park, and Umit Y Ogras, “Near-Optimal Energy Allocation for Self-Powered Wearable Systems,” in *2017 IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, IEEE, 2017, pp. 368–375. DOI: [10.1145/3126530](https://doi.org/10.1145/3126530).
- C18 **Ganapati Bhat**, Sharanya Srinivas, Vamsi Chagari, Jaehyun Park, Thomas McGiffen, Hyunseok Lee, Daniel W Bliss, Chaitali Chakrabarti, and Umit Y Ogras, “Fluid Wireless Protocols: Energy-Efficient Design and Implementation,” in *Proceedings of the 15th IEEE/ACM Symposium on Embedded Systems for Real-Time Multimedia*, 2017, pp. 22–31. DOI: [10.1145/3139315.3139321](https://doi.org/10.1145/3139315.3139321).
- C19 **Ganapati Bhat**, Ujjwal Gupta, Nicholas Tran, Jaehyun Park, Sule Ozev, and Umit Y Ogras, “Multi-Objective Design Optimization for Flexible Hybrid Electronics,” in *Proceedings of the 35th International Conference on Computer-Aided Design*, 2016, pp. 1–8. DOI: [10.1145/2966986.2967057](https://doi.org/10.1145/2966986.2967057).

Other Papers, Preprints, and Reports

1. Ranadeep Deb, **Ganapati Bhat**, Sizhe An, Holly Shill, and Umit Y Ogras, “Trends in Technology Usage for Parkinson’s Disease Assessment: A Systematic Review,” *medRxiv*, 2021.
2. Sizhe An, **Ganapati Bhat**, Suat Gumussoy, and Umit Ogras, “Transfer Learning for Human Activity Recognition using Representational Analysis of Neural Networks,” *arXiv preprint arXiv:2012.04479*, 2020.
3. **Ganapati Bhat**, Suat Gumussoy, and Umit Y Ogras, “Analysis and Control of Power-Temperature Dynamics in Heterogeneous Multiprocessors,” in *SRC Techcpn*, 2019.
4. Jaehyun Park, **Ganapati Bhat**, Cemil S Geyik, Hyung Gyu Lee, and Umit Y Ogras, “Optimizing Operations per Joule for Energy Harvesting IoT Devices,” *Technical Report, Arizona State University*, 2018.

Posters

- P1 **Ganapati Bhat**. “Self-Powered Internet of Things for Wide Area Sensing and Situational Awareness.” *DARPA Risers at DARPA Forward Conference, Washington State University, Pullman*, 2022.

- P2 **Ganapati Bhat**, Umit Y. Ogras. "An Online Learning Framework for Activity Recognition on Wearable IoT Devices." *ACM Student Research Competition at ICCAD*, 2019.
- P3 **Ganapati Bhat**, Suat Gumussoy, Umit Y. Ogras. "Analysis and Control of Power-Temperature Dynamics in Heterogeneous Multiprocessors." *SRC System-Level Design Review*, 2019.
- P4 **Ganapati Bhat**. "Wearable IoT Devices for Health Monitoring." *Ph.D. Forum at Design Automation Conference (DAC)*, 2019.
- P5 **Ganapati Bhat**. "Wearable IoT Devices for Health Monitoring." *Ph.D. Forum at Int. Conf. on Information Processing in Sensor Networks (IPSN)*, 2019.

PRESENTATIONS AND OUTREACH

A. Technical Presentations

1. "Energy-Efficient Missing Data Recovery in Wearable Devices: A Novel Search-Based Approach". *IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED)*, August 2023.
2. "Towards Optimal Design of Self-Sustainable Wearable IoT Devices for Reliable Mobile Health Applications". *IEEE International Workshop on Design Automation for Cyber-Physical Systems (DACPS) at Design Automation Conference (DAC)*, July 2023.
3. "Towards Open Source Platforms for Wearable Health Monitoring." *Open-Source Computer Architecture Research (OSCAR) (co-located with ISCA 2023)*, June 2023.
4. "Reliable Machine Learning for Wearable Activity Monitoring: Novel Algorithms and Theoretical Guarantees." *Int. Conf. on Computer-Aided Design (ICCAD)*, November 2022.
5. "Adaptive Energy Management for Self-Sustainable Wearables in Mobile Health." *The Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI-22)*, March 2022.
6. "Special Session: Physically Flexible Devices for Health and Activity Monitoring: Challenges from Design to Test." *2020 IEEE VLSI Test Symp. (VTS)*, 2020.
7. "An Ultra-Low Energy Human Activity Recognition Accelerator for Wearable Health Applications." *Embedded Systems Week*, 2019.
8. "REAP: Runtime Energy-Accuracy Management for Energy Harvesting IoT Devices." *Proc. of Design Automation Conf. (DAC)*, June 2019.
9. "Wearable IoT Devices for Health Monitoring." *TechConnect Briefs*, June 2019.
10. "Online Human Activity Recognition using Low-Power Wearable Devices." *Int. Conf. on Computer-Aided Design (ICCAD)*, November 2018.
11. "Near Optimal Energy Allocation for Self-Powered Wearable Systems." *Int. Conf. on Computer-Aided Design (ICCAD)*, November 2017.
12. "Power-Temperature Stability and Safety Analysis for Multiprocessor Systems." *Embedded Systems Week*, October 2017.
13. "DyPO: Dynamic Pareto Optimal Configuration Selection for Heterogeneous MpSoCs." *Embedded Systems Week*, October 2017.
14. "Fluid Wireless Protocols: Energy-Efficient Design and Implementation." *Symp. on Embedded Systems for Real-Time Multimedia*, October 2017.
15. "Multi-Objective Design Optimization for Flexible Hybrid Electronics." *Int. Conf. on Computer-Aided Design (ICCAD)*, November 2016.

B. Invited Talks

1. "Evolution of Computing from Mobile Systems to Self-Powered Wearable Devices." *Washington State University*, 2020.
2. "Design, Optimization, and Applications of Wearable IoT Devices." *University of Kansas*, 2020.
3. "Evolution of Computing from Mobile Systems to Self-Powered Wearable Devices." *University of North Texas*, 2020.
4. "Design, Optimization, and Applications of Wearable IoT Devices." *Villanova University*, 2020.
5. "Evolution of Computing from Mobile Systems to Self-Powered Wearable Devices." *University of Texas at Dallas*, 2020.
6. "Evolution of Computing from Mobile Systems to Self-Powered Wearable Devices." *University of Maryland, College Park*, 2020.
7. "Design, Optimization, and Applications of Wearable IoT Devices." *Indian Institute of Science*, 2020.

TEACHING EXPERIENCE

A. Teaching Summary

Course Number	Course Name	Semester	Students	Course Evaluation	Instructor Evaluation
CPTS 260	Introduction to Computer Architecture	Fall 2023	184	NA	NA
CPTS 260	Introduction to Computer Architecture	Spring 2023	44	4.2	4.2
CPTS 260	Introduction to Computer Architecture	Fall 2022	137	4.1	4.2
EE 524/ CPTS 561	Advanced Computer Architecture	Fall 2022	9	4.5	4.5
CPTS 260	Introduction to Computer Architecture	Spring 2022	63	4.0	4.2
EE 524/ CPTS 561	Advanced Computer Architecture	Fall 2021	10	4.6	4.8
CPTS 260	Introduction to Computer Architecture	Spring 2021	104	4.4	4.4
EE 524/ CPTS 561	Advanced Computer Architecture	Fall 2020	34	4.2	4.3

B. List of Courses Taught at WSU

CptS 260 Intro to Computer Architecture (undergraduate) WSU, Spring 2021, 2022, 2023; Fall 2022, 2023

- Primary instructor for the undergraduate level computer architecture class at Washington State University.
- Course objective is to introduce students to computer architecture concepts including numbering systems, instruction set architectures, pipelining and MIPS CPU. By the end of the course students are able to understand the hardware software interface for computers.
- Contact hours – Three 50-minute lectures per week.
- Spring 2021 enrollment – 104, Spring 2021 course evaluation – 53% responded, overall instructor rating 4.4 (EECS 4.3, VCEA 4.4). Spring 2022 enrollment – 63, Spring 2022 course evaluation – 56% responded, overall instructor rating 4.2 (EECS 4.3, VCEA 4.4). Fall 2022 enrollment – 137, Fall 2022 course evaluation – 42% responded, overall instructor rating 4.2 (EECS 4.2, VCEA 4.3). Spring 2023

enrollment – 44, Spring 2023 course evaluation – 43% responded, overall instructor rating 4.2 (EECS 4.3, VCEA 4.3).

EE 524/Cpts 561 Advanced Computer Architecture (graduate) WSU, Fall 2020, 2021, 2022

- Primary instructor for the graduate level computer architecture class at Washington State University.
- Redesigned the course material by developing a new set of lecture slides that follow top computer architecture programs. The streamlined set of lecture slides were useful in having a coherent flow of material to the students.
- The aim of this course is to provide a deep understanding of fundamental principles in the design of modern processors. The course studies architectural methods used by designers to maximize the performance achieved by modern processors. Since design of high-performing and efficient software programs requires a deep understanding of the underlying hardware, the course will expose both hardware and software designs.
- Major differences with respect to prior offering are below
 - > Introduced the gem5 simulator to the class so that students can get exposure to state-of-the-art architectural simulators.
 - > Introduced students to hands on experience on performance monitoring in real-world processors using the Odroid-XU3 development board.
- Contact hours – Three 50-minute lectures per week. 2020 enrollment – 34, 2020 course evaluation – 91% responded, overall instructor rating 4.3 (EECS 4.3, VCEA 4.4). 2021 enrollment – 10, 2021 course evaluation – 100% responded, overall instructor rating 4.8 (EECS 4.3, VCEA 4.3). 2022 enrollment – 9, 2022 course evaluation – 89% responded, overall instructor rating 4.5 (EECS 4.2, VCEA 4.3).

C. Other teaching experience

Guest Lecturer, System-level Design for Multicore Architectures ASU, Fall 2017, Fall 2018

- Introduced possible research projects to classes of 30 and 40 students, respectively
- Mentored student groups in their research projects in the class. The projects involved applications of flexible wearable devices, dynamic power management, and instrumentation of mobile SoCs.

STUDENT ADVISING

A. Current Graduate Students

1. Nuzhat Yamin, PhD Student, Fall 2020 – present
2. Dina Hussein, PhD Student, Spring 2021 – present
3. Nasibeh Heshmati, PhD Student, Starting Spring 2024 – present

B. Graduates

1. Andrii Zhuravchak, MS Electrical and Computer Engineering, 2023

C. Graduate Committee Membership

- | | |
|--------------------------------------|---------------------------------------|
| 1. Subhankar Ghosh, C.S. PhD | 7. Tazin Ramham, C.S., PhD |
| 2. Alaleh Ahmadian, C.S. PhD | 8. Ramesh Sah, C.S., MS Thesis |
| 3. Dwaipayan Choudhury, E.C.E. PhD | 9. Zhekai Chen, C.E., MS Non thesis |
| 4. Taha Belkhouja, C.S. PhD | 10. Zhifan Liang, C.E., MS Non thesis |
| 5. Ramesh Sah. C.S., PhD | 11. Sikai Huang, C.E., MS Non thesis |
| 6. Chukwufumnanya Ogbogu, E.C.E. PhD | 12. Yuan Deng, C.E., MS Non thesis |

- | | |
|--|---|
| 13. Liangqian Xiong, C.E., MS Non thesis | 17. Hsueh-Jen Lih, C.E., MS Non thesis |
| 14. Zhi Zhang, C.E., MS Non thesis | 18. Xiangjin Huang, C.E., MS Non thesis |
| 15. Shengnan Tian, C.E., MS Non thesis | 19. Yicheng Chen, C.E., MS Non thesis |
| 16. Xi Jiang, C.E., MS Non thesis | 20. Alex Jones, C.S., MS Non thesis |

PROFESSIONAL MEMBERSHIPS

Member, Institute of Electrical and Electronics Engineers
 Member, Association for Computing Machinery

SERVICE

A. Grant Review Service

- NSF Reviewer and Panelist, 2021

B. Journal Editorial Board Service

- Guest editor, ACM Transactions on Design Automation of Electronic Systems, Special Issue on Embedded System Software/Tools, 2023
- Guest editor, IEEE Design and Test Magazine, Special Issue on Wearable IoT Devices for Reliable Mobile Health Applications, 2023
- Associate editor, IEEE Embedded Systems Letters, 2022 – present
- Associate editor, IEEE Design and Test Magazine, 2022 – present
- Member of reviewer board, MDPI Journal of Low Power Electronics and Appl., 2020 – present

C. Conference Organization

- Web co-chair, International Symposium on Low Power Electronics Design (ISLPED), 2024
- Organizer, 2023 Embedded System Software Competition (ESSC), 2023. The first software competition at ESWEEK was a success with participation from nine teams. The teams were spread across five to six countries from multiple continents.

D. Conference Committee Membership and Session Chair

- Track co-chair, International Conference on VLSI Design (VLSID), 2024
- Track chair, Embedded Systems Week (ESWEEK), 2023
- Senior program committee member, AAAI Conference on Artificial Intelligence, 2023, 2024
- Program committee member, ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED), 2022, 2023
- Program committee member, Design Automation Conference (DAC), 2022, 2023, 2024
- Program committee member, International Conference on Computer Aided Design (ICCAD), 2021, 2022, 2023
- Program committee member, IEEE PerCom International workshop on Pervasive Health Technologies (PerHealth 2021)
- Program committee member, Embedded Systems Week (ESWEEK), 2021, 2022
- Session chair, International Symposium on Low Power Electronics Design (ISLPED), 2021, 2023
- Session chair, Design Automation Conference (DAC), 2023
- Session chair, Design Automation and Test in Europe (DATE), 2021
- Session chair, Embedded Systems Week (ESWEEK), 2020, 2021, 2023

- Member of reviewer board, MDPI Journal of Low Power Electronics and Applications

E. Peer-Reviewing

- Reviewer, IEEE Transactions on Very Large Integration (VLSI) Systems
- Reviewer, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems
- Reviewer, IEEE Design & Test Magazine
- Reviewer, IEEE Transactions on Mobile Computing
- Reviewer, IEEE Embedded Systems Letters
- Reviewer, IEEE Transactions on Computers
- Reviewer, ACM Transactions on Design Automation of Electronic Systems (TODAES)
- Reviewer, ACM Transactions on Architecture and Code Optimization
- Reviewer, ACM Journal of Emerging Technologies in Computing Systems
- Reviewer, ACM Transactions on Embedded Computing Systems
- Reviewer, ACM Transactions on Sensor Networks
- Reviewer, IET Computers & Digital Techniques
- Reviewer, MDPI Sensors
- Reviewer, MDPI Journal of Low Power Electronics and Applications
- Reviewer, Elsevier Neurocomputing
- Reviewer, Elsevier Machine Learning and Applications
- Reviewer, Elsevier Journal of Sustainable Computing

F. Washington State University Service

- | | |
|---|-----------------------|
| - Member, Graduate Services Committee, School of EECS | Aug. 2021 – present |
| - Faculty advisor, Palouse Robosub | Aug. 2021 – present |
| - Member, CS Faculty Search Committee | Aug. 2021 – Jul. 2022 |
| - Member, CS (Systems) Faculty Search Committee | Aug. 2022 – present |
| - Faculty Mentor, TMP Program | Jan. 2022 – present |
| - Faculty Mentor, LSAMP Program | Jan. 2022 – present |

G. Arizona State University

- | | |
|---|------------------------|
| - Reviewer, GPSA Outstanding Research Award | Spring 2017, Fall 2019 |
| - Reviewer, GPSA Teaching Excellence Award | Spring and Fall 2017 |