

Yuhao Zhu

CONTACT INFORMATION

Assistant Professor
Department of Computer Science
University of Rochester
3501 Wegmans Hall
Rochester, NY 14627

+1 (585) 275-1192
yzhu@rochester.edu
<https://yuhaozhu.com/>
<https://horizon-lab.org/@yzhu88>

RESEARCH INTERESTS

I work on software and hardware design to solve real-world problems that are technically deep and have broad societal impact. To that end, my recent work has focused mostly on visual computing, e.g., Augmented/Virtual Reality, autonomous machines, and digital cultural heritage.

EDUCATION

The University of Texas at Austin
Ph.D., Electrical and Computer Engineering *May 2017*
M.S.E., Electrical and Computer Engineering *May 2015*
Dissertation: [Energy-Efficient Mobile Web Computing](#)

Beihang University, Beijing, China
B.S., Computer Science and Engineering *June 2010*

ACADEMIC HONORS

- 2022, MICRO Hall of Fame
- 2020, NSF CAREER Award
- 2019, University Research Award, University of Rochester
- 2018, ACM SIGARCH – IEEE-CS TCCA Outstanding Dissertation Award, Honorable Mention
- 2017, Google Faculty Research Award
- 2016, Google Ph.D. Fellowship
- 2011, Microelectronics and Computer Development Fellowship, UT Austin

PUBLICATION AWARDS

- 2022, IEEE Micro Top Picks of Computer Architecture, Honorable Mention
“ANT: Exploiting Adaptive Numerical Data Type for Low-bit DNN Quantization”
- 2022, IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), Best Paper Honorable Mention
“Real-Time Gaze Tracking with Event-Driven Eye Segmentation”
- 2022, IEEE International Symposium on High-Performance Computer Architecture (HPCA), Best Paper Nominee
“S2TA: Exploiting Structured Sparsity for Energy-Efficient Mobile CNN Acceleration”
- 2022, Kostas Pantazos Memorial Award for Outstanding Paper in Visualization and Data Analysis, Society for Imaging Science and Technology
“Digital Reconstruction of Elmina Castle for Mobile Virtual Reality via Point-based Detail Transfer”
- 2020, International Conference on Parallel Architectures and Compilation Techniques (PACT), Best Paper Nominee
“Low-Latency Proactive Continuous Vision”

- **2019, IEEE Micro Top Picks of Computer Architecture**
“Energy-Efficient Video Processing for Virtual Reality”
- **2019, IEEE/ACM International Symposium on Microarchitecture (MICRO), Best Paper Nominee**
“Tigris: Architecture and Algorithms for 3D Perception in Point Clouds”
- **2018, IEEE Micro Top Picks of Computer Architecture, Honorable Mention**
“Euphrates: Algorithm-SoC Co-Design for Low-Power Mobile Continuous Vision”
- **2015, IEEE Micro Top Picks of Computer Architecture, Honorable Mention**
“Microarchitectural Implications of Event-driven Server-side Web Applications”
- **2014, Best of Computer Architecture Letters Award**
“Exploiting Webpage Characteristics for Energy-Efficient Mobile Web Browsing”
- **2010, Outstanding Undergraduate Thesis Award, Beihang University**
“Distributed Time, Conservative Parallel Logic Simulation on GPUs”

MENTORING AWARDS

- **2020, CRA Outstanding Undergraduate Researcher, Honorable Mention**
2019, ACM Student Research Competition (ASPLOS 2019), Gold Medalist
Sam Triest (Advisee)
- **2019, CRA Outstanding Undergraduate Researcher, Honorable Mention**
2019, A. Richard Newton Young Student Fellow (DAC 2019)
Qiuyue Sun (Advisee)
- **2020, CRA Outstanding Undergraduate Researcher, Honorable Mention**
Sifan Ye (Advisee)

PROFESSIONAL POSITIONS

University of Rochester
Assistant Professor, Department of Computer Science Jan. 2018 - now
Affiliated Faculty, Goergen Institute for Data Science June 2018 - now

Arm Research
Visiting Researcher July 2017 - Dec. 2017

Harvard University
Research Fellow Aug. 2016 - May 2017

The University of Texas at Austin
Graduate Researcher Aug. 2010 - May 2017
Teaching Assistant Fall 2010, Spring 2011, Spring 2014

Google Inc.
SWE Intern (Lead of [Flow API](#) of the [Catapult](#) project) Summer 2015

AMD Research Lab
Research Intern Summer 2012, Summer 2013

STMicroelectronics
Co-op Engineer Summer 2011

Tsinghua University
Undergraduate Researcher June 2009 - May 2010

PUBLICATIONS **Journal Articles**

- Carlos Mauricio Villegas Burgos, Pei Xiong, Liangyu Qiu, [Yuhao Zhu](#), Nick Vamivakas
Co-designed Metaoptoelectronic Deep Learning
Optical Express, 2023, (60)15:4356-4365
- Shaoshan Liu, Bo Yu, Jie Tang, [Yuhao Zhu](#), Xue Liu
[Communication Challenges in Infrastructure-Vehicle Cooperative Autonomous Driving: A Field Deployment Perspective](#)
IEEE Wireless Communications, May 2022
- Carlos Mauricio Villegas Burgos, Tianqi Yang, [Yuhao Zhu](#), Nick Vamivakas
[A Design Framework for Metasurface Optics-based Convolutional Neural Networks](#)
Applied Optics, 2021, (60)15:4356-4365
- Zishen Wan, Bo Yu, Thomas Yuang Li, Jie Tang, [Yuhao Zhu](#), Yu Wang, Arijit Raychowdhury, Shaoshan Liu
[A Survey of FPGA-Based Robotic Computing](#)
IEEE Circuits and Systems Magazine, 2021, 21(2):48-74
- Yue Leng, Chi-chun Chen, Qiuyue Sun, Jian Huang, [Yuhao Zhu](#)
[Energy-Efficient Video Processing for Virtual Reality](#)
IEEE Micro Special Issue on Top Picks from the 2019 Computer Architecture Conferences, May/June 2020, 40(3):30-36
- Yiming Gan, Yuxian Qiu, Jingwen Leng, [Yuhao Zhu](#)
[SVSoC: Speculative Vision Systems-on-a-Chip](#)
Computer Architecture Letters (CAL), March 2019, 18(1):47-50
- [Yuhao Zhu](#), Vijay Janapa Reddi
[Optimizing General-Purpose CPUs for Energy-Efficient Mobile Web Computing](#)
ACM Transactions on Computer Systems (TOCS), March 2017, 35(1):1
- [Yuhao Zhu](#), Vijay Janapa Reddi, Robert Adolf, Saketh Rama, Brandon Reagen, Gu-Yeon Wei, David M. Brooks
[Cognitive Computing Safety: The New Horizon for Reliability / The Design and Evolution of Deep Learning Workloads](#)
IEEE Micro Special Issue on Cognitive Architectures, Jan/Feb 2017, 37(1):15-21
- Peter Bailis, Jean Yang, Vijay Janapa Reddi, [Yuhao Zhu](#)
[Research for Practice: Web Security and Mobile Web Computing \(Website\)](#)
Communications of the ACM (CACM), Jan 2017, 60(1):50-53
Also appears in *ACM Queue*, July/Aug 2016, 14(4):80-95.
- [Yuhao Zhu](#), Matthew Halpern, Vijay Janapa Reddi
[The Role of the CPU in Energy-Efficient Mobile Web Browsing](#)
IEEE Micro Special Issue on Mobile Systems, Jan/Feb 2015, 35(1):26-33
- [Yuhao Zhu](#), Aditya Srikanth, Jingwen Leng, Vijay Janapa Reddi
[Exploiting Webpage Characteristics for Energy-Efficient Mobile Web Browsing](#)
Computer Architecture Letters (CAL), Oct 2012, 13(1):33-36
Awarded Best of Computer Architecture Letter in 2014
- [Yuhao Zhu](#), Bo Wang, Yangdong Deng
[Massively Parallel Logic Simulation with GPUs](#)

Conference Papers

- [Yuhao Zhu](#)
[Teaching Color Science to EECS Students Using Interactive Tutorials: Tools and Lessons](#)
IS&T EI (VDA) 2023
- Elias Neuman-Donihue, Michael Jarvis, [Yuhao Zhu](#)
[FastPoints: A State-of-the-Art Point Cloud Renderer for Unity](#)
IS&T EI (VDA) 2023
- Abhishek Tyagi, Yiming Gan, Shaoshan Liu, Bo Yu, Paul Whatmough, [Yuhao Zhu](#)
[Thales: Formulating and Estimating Architectural Vulnerability Factors for DNN Accelerators](#)
HPCA 2023
- Budmonde Duinkharjav, Kenny Chen, Abhishek Tyagi, Jiayi He, [Yuhao Zhu](#), Qi Sun
[Color-Perception-Guided Display Power Reduction for Virtual Reality](#)
SIGGRAPH Asia 2022
- Cong Guo, Chen Zhang, Jingwen Leng, Zihan Liu, Fan Yang, Yunxin Liu, Minyi Guo, [Yuhao Zhu](#)
[ANT: Exploiting Adaptive Numerical Data Type for Low-bit Deep Neural Network Quantization](#)
MICRO 2022
IEEE Micro Top Picks of Computer Architecture (Honorable Mention) in 2022
- Yu Feng, Gunnar Hammonds, Yiming Gan, [Yuhao Zhu](#)
[Crescent: Taming Memory Irregularities for Accelerating Deep Point Cloud Analytics](#)
ISCA 2022
- Gregory Heyworth, Keith T. Knox, Kenneth Boydston, [Yuhao Zhu](#)
[Multispectral Scheimpflug: Imaging Degraded Books That Open Less Than 30 Degrees](#)
IS&T Archiving 2022
- Yiming Gan, Paul Whatmough, Bo Yu, Shaoshan Liu, [Yuhao Zhu](#)
[BRAUM: Analyzing and Protecting Autonomous Machine Software Stack](#)
ISSRE 2022
- Yu Feng, Nathan Goulding-Hotta, Asif Khan, Hans Reyserhove, [Yuhao Zhu](#)
[Real-Time Gaze Tracking with Event-Driven Eye Segmentation](#)
IEEE VR 2022
Best Paper Nominee; Invited Presentation at IEEE VIS 2022
- [Yuhao Zhu](#)
[RTNN: Accelerating Neighbor Search Using Hardware Ray Tracing](#)
PPoPP 2022
- Zhi-Gang Liu, Paul Whatmough, [Yuhao Zhu](#), Matt Mattina
[S2TA: Exploiting Structured Sparsity for Energy-Efficient Mobile CNN Acceleration](#)
HPCA 2022
Best Paper Nominee

- Sifan Ye, Ting Wu, Michael Jarvis, [Yuhao Zhu](#)
[Digital Reconstruction of Elmina Castle for Mobile Virtual Reality via Point-based Detail Transfer](#)
IS&T EI (VDA) 2022
Kostas Pantazos Memorial Award for Outstanding Paper in Visualization and Data Analysis
- Weizhuang Liu, Bo Yu, Yiming Gan, Qiang Liu, Jie Tang, Shaoshan Liu, [Yuhao Zhu](#)
[Archytas: A Framework for Synthesizing and Dynamically Optimizing Accelerators for Robotic Localization](#)
MICRO 2021
- Joshua Romphf, Elias Neuman-Donihue, Gregory Heyworth, [Yuhao Zhu](#)
[Resurrect3D: An Open and Customizable Platform for Visualizing and Analyzing Cultural Heritage Artifacts](#)
Web3D 2021
- Yangjie Zhou, Mengtian Yang, Cong Guo, Jingwen Leng, Yun Liang, Quan Chen, Minyi Guo, [Yuhao Zhu](#)
[Characterizing and Demystifying the Implicit Convolution Algorithm on Commercial Matrix-Multiplication Accelerators](#)
IISWC 2021
- Shaoshan Liu, Bo Yu, Yahui Liu, Kunai Zhang, Yisong Qiao, Thomas Yuang Li, Jie Tang, [Yuhao Zhu](#)
[Brief Industry Paper: The Matter of Time — A General and Efficient System for Precise Sensor Synchronization in Robotic Computing](#)
RTAS 2021
- Yiming Gan, Bo Yu, Boyuan Tian, Leimeng Xu, Wei Hu, Shaoshan Liu, Qiang Liu, Yanjun Zhang, Jie Tang, [Yuhao Zhu](#)
[Eudoxus: Characterizing and Accelerating Localization in Autonomous Machines](#)
HPCA 2021
- Yu Feng, Boyuan Tian, Tiancheng Xu, Paul Whatmough, [Yuhao Zhu](#)
[Mesorasi: Architecture Support for Point Cloud Analytics via Delayed-Aggregation](#)
MICRO 2020
- Bo Yu, Wei Hu, Leimeng Xu, Jie Tang, Shaoshan Liu, [Yuhao Zhu](#)
[Building the Computing System for Autonomous Micromobility Vehicles: Design Constraints and Architectural Optimizations](#)
MICRO 2020
- Yiming Gan, Yuxian Qiu, Jingwen Leng, Minyi Guo, [Yuhao Zhu](#)
[Ptolemy: Architecture Support for Robust Deep Learning](#)
MICRO 2020
- Yu Feng, Shaoshan Liu, [Yuhao Zhu](#)
[Real-Time Spatio-Temporal LiDAR Point Cloud Compression](#)
IROS 2020
- Haichuan Yang, Shupeng Gui, [Yuhao Zhu](#), Ji Liu
[Automatic Neural Network Compression by Sparsity-Quantization Joint Learning: A Constrained Optimization-based Approach](#)
CVPR 2020
- Cong Guo, Bo Yang Hsueh, Jingwen Leng, Yuxian Qiu, Yue Guan, Zehuan Wang, Xiaoying Jia, Xipeng Li, Minyi Guo, [Yuhao Zhu](#)

[Accelerating Sparse DNN Models Without Hardware-Support via Tile-wise Sparsity](#)
SC 2020

- Yiming Gan, Yuxian Qiu, Lele Chen, Jingwen Leng, [Yuhao Zhu](#)
[Low-Latency Proactive Continuous Vision](#)
PACT 2020
Best Paper Nominee
- Cong Guo, Yangjie Zhou, Jingwen Leng, [Yuhao Zhu](#), Zidong Du, Quan Chen, Chao Li, Minyi Guo, Bin Yao
[Balancing Efficiency and Flexibility for DNN Acceleration via Temporal GPU-Systolic Array Integration](#)
DAC 2020
- Anand Samajdar, J. Joseph, [Yuhao Zhu](#), Paul Whatmough, Matt Mattina, Tushar Krishna
[A Systematic Methodology for Characterizing Scalability of DNN Accelerators](#)
ISPASS 2020
- Qiuyue Sun, Amir Taherin, Yawo Siatitse, [Yuhao Zhu](#)
[Energy-Efficient 360-Degree Video Rendering on FPGA via Algorithm-Architecture Co-Design](#)
FPGA 2020
- Yu Feng, Paul Whatmough, [Yuhao Zhu](#)
[ASV: Accelerated Stereo Vision System](#)
MICRO 2019
- Tiancheng Xu, Boyuan Tian, [Yuhao Zhu](#)
[Tigris: Architecture and Algorithms for 3D Perception in Point Clouds](#)
MICRO 2019
Best Paper Nominee
- Yu Feng, [Yuhao Zhu](#)
[PES: Proactive Event Scheduling for Energy-Efficient Mobile Web Computing](#)
ISCA 2019
- Yue Leng, Chi-chun Chen, Qiuyue Sun, Jian Huang, [Yuhao Zhu](#)
[Energy-Efficient Video Processing for Virtual Reality](#)
ISCA 2019
IEEE Micro Top Picks of Computer Architecture in 2019
- Yuxian Qiu, Jingwen Leng, Cong Guo, Quan Chen, Chao Li, Minyi Guo, [Yuhao Zhu](#)
[Adversarial Defense Through Network Profiling Based Path Extraction](#)
CVPR 2019
- Haichuan Yang, [Yuhao Zhu](#), Ji Liu
[ECC: Energy-Constrained Deep Neural Network Compression via a Bilinear Regression Model](#)
CVPR 2019
- Haichuan Yang, [Yuhao Zhu](#), Ji Liu
[Energy-Constrained Compression for Deep Neural Networks via Weighted Sparse Projection and Layer Input Masking](#)
ICLR 2019
- Yu Wang, [Yuhao Zhu](#), Glenn Ko, Brandon Reagen, Gu-Yeon Wei, David Brooks

[Demystifying Bayesian Inference Workloads](#)
ISPASS 2019

- Wenzhi Cui, Daniel Richins, [Yuhao Zhu](#), Vijay Janapa Reddi
[Tail Latency in Node.js: Energy Efficient Turbo Boosting for Long Latency Requests in Event-Driven Web Services](#)
VEE 2019
- Yue Leng, Chi-chun Chen, Qiuyue Sun, Jian Huang, [Yuhao Zhu](#)
[Semantic-Aware Virtual Reality Video Streaming](#)
APSys 2018
- [Yuhao Zhu](#), Anand Samajdar, Matthew Mattina, Paul Whatmough
[Euphrates: Algorithm-SoC Co-Design for Low-Power Mobile Continuous Vision](#)
ISCA 2018
IEEE Micro Top Picks of Computer Architecture (Honorable Mention) in 2018
- Yuwei Hu, Jidong Zhai, Dinghua Li, Yifan Gong, [Yuhao Zhu](#), Wei Liu, Lei Su, Jiangming Jin
[BitFlow: Exploiting Vector Parallelism for Binary Neural Networks on CPU](#)
IPDPS 2018
- [Yuhao Zhu](#), Matthew Mattina, Paul Whatmough
[Mobile Machine Learning Hardware at ARM: A Systems-on-Chip \(SoC\) Perspective](#)
SysML 2018
- [Yuhao Zhu](#), Vijay Janapa Reddi
[GreenWeb: Language Extensions for Energy-Efficient Mobile Web Computing](#)
PLDI 2016
- Matthew Halpern, [Yuhao Zhu](#), Vijay Janapa Reddi
[Mobile CPU's Rise to Power: Quantifying the Impact of Generational Mobile CPU Design Trends on Performance, Energy, and User Satisfaction](#)
HPCA 2016
- [Yuhao Zhu](#), Daniel Richins, Matthew Halpern, Vijay Janapa Reddi
[Microarchitectural Implications of Event-driven Server-side Web Applications](#)
MICRO 2015
IEEE Micro Top Picks of Computer Architecture (Honorable Mention) in 2015
- [Yuhao Zhu](#), Matthew Halpern, Vijay Janapa Reddi
[Event-based Scheduling for Energy-Efficient QoS \(eQoS\) in Mobile Web Applications](#)
HPCA 2015
- Matthew Halpern, [Yuhao Zhu](#), Ramesh Peri, Vijay Janapa Reddi
[Mosaic: Cross-Platform User-Interaction Record and Replay Tool for the Fragmented Android Ecosystem](#)
ISPASS 2015
- [Yuhao Zhu](#), Vijay Janapa Reddi
[WebCore: Architectural Support for Mobile Web Browsing](#)
ISCA 2014
- Chen Zhou, Xiaofei Wang, Weichao Xu, [Yuhao Zhu](#), Vijay Janapa Reddi, Chris Kim
[Estimation of Instantaneous Frequency Fluctuation in a Fast DVFS Environment](#)

[Using an Empirical BTI Stress-Relaxation Model](#)
IRPS 2014

- [Yuhao Zhu](#), Vijay Janapa Reddi
[High-Performance and Energy-Efficient Mobile Web Browsing on Big/Little Systems](#)
HPCA 2013
- [Yuhao Zhu](#), Yangdong Deng, Yubei Chen
[Hermes: An Integrated CPU/GPU Microarchitecture for IP Routing](#)
DAC 2011
- Bo Wang, [Yuhao Zhu](#), Yangdong Deng
[Distributed Time, Conservative Parallel Logic Simulation on GPUs](#)
DAC 2010

Patents

- [Yuhao Zhu](#), Paul Whatmough
[Region of Interest Determination in Video](#)
US Patent App. 15/875,464
- [Yuhao Zhu](#), Paul Whatmough
[Computer Vision Processing](#)
US Patent App. 16/127,007

Book Chapters

- Yangdong Deng, [Yuhao Zhu](#), Bo Wang
[Asynchronous Parallel Logic Simulation on Modern Graphics Processors](#)
GPU Solutions to Multi-scale Problems in Science and Engineering, 2013
- Yangdong Deng, Xiaomeng Jiao, Shuai Mu, Kang Kang, [Yuhao Zhu](#)
[NPGPU: Network Processing on Graphics Processing Units](#)
Theoretical and Mathematical Foundations of Computer Science, 2011

TALKS
[decks](#)
[videos](#)

Invited Talks

- **High Performance Embedded Imaging: An Optics, Sensing, and Computing Co-Designed Approach**
High Performance Computing for Imaging at EI 2023, Jan 2023, San Francisco, CA
- **Color Perception-Guided Display Optimizations: Power and Beyond**
Meta, Sept 2022, Virtual
- **Go Horizontal, Not Vertical: Addressing Visual Computing Challenges in Autonomous Machines**
RoboArch Workshop co-located with MICRO 2022, Oct 2022, Chicago, IL
- **RTNN: Accelerating Neighbor Search Using Hardware Ray Tracing**
WDDSA Workshop co-located with MICRO 2022, Oct 2022, Chicago, IL
- **Improving and Harnessing Software Resiliency in Autonomous Machines**
Plenary Panel on Reliability of Autonomous Machines, IEEE COMPSAC, June 2022, Virtual
- **Visual Computing: A Horizontal Approach**
Efficient AI Seminar, Rutgers University, Oct 2022, Virtual
Keynote Speech, IFIP NPC, Sept 2022, Virtual

GlobalFoundries, May 2022, Virtual
University of Massachusetts Amherst, May 2022, Virtual

- **Intelligent Visual Computing**
Duke University, March 2021, Virtual
University of Utah, Oct 2021, Virtual
HALO workshop co-located with ICCAD, Nov 2021, Virtual
- **Watt-Wise Web: Architecting a Responsive and Energy-Efficient Mobile Web**
University of Utah, Oct 2020, Virtual
- **Architecture Support for Robust Deep Learning: Exploiting Software 1.0 Techniques to Defend Software 2.0**
AMD Research, Oct 2020, Virtual
- **Rethinking Computer Systems Stack for Point Cloud Processing**
Arm Research, Sept 2019, Waltham, MA
- **Getting Computer Systems Ready for Visual Computing in Ten Years**
Intel Labs, Sept 2019, Hillsboro, OR
Harvard University, Sept 2019, Cambridge, MA
Yale University, Oct 2019, New Haven, CT
University of Michigan, Nov 2019, Ann Arbor, MI
FastPath Workshop co-located with ISPASS, Aug 2020, Virtual
- **The Next Quintillion Pixels and Beyond: Architecting Next-Generation Mobile Visual Computing Systems**
Arm Research, Sept 2019, Austin, TX
UT Austin, Sept 2019, Austin, TX
Rice University, Sept 2019, Houston, TX
- **Resource-Guaranteed Deep Learning**
Arm Research, April 2019, Waltham, MA
- **Energy-Efficient Mobile Web: Proactive and Reactive Perspectives**
Google, April 2018, Seattle, WA
- **Algorithm-SoC Co-design for Energy-Efficient Mobile Continuous Vision**
Cornell University, Feb 2018, Ithaca, NY
CogArch Workshop co-located with ASPLOS 2018, March 2018, Williamsburg, VA
SRI International, April 2018, Princeton, NJ
Rochester Institute of Technology, Feb 2019, Rochester, NY
- **The Watt Wise Web**
Texas A&M University, Jan 2017, Teleseminar
Boston Area Architecture Workshop (BARC), Jan 2017, Cambridge, MA
ARM Research, Jan 2017, Austin, TX
UT Austin School of Information, Feb 2017, Austin, TX
- **WebCore: Architectural Support for Mobile Web Browsing**
Intel, July 2014, Austin, TX
- **High-Performance and EnergyEfficient Mobile Web Browsing on Big/Little Systems**
UT Austin Programming Language Lunch Seminar, September 2012, Austin, TX

AMD Research Lab, August 2012, Austin, TX

Conference Presentations

- Teaching Color Sciences to EECS Students Using Interactive Tutorials
Visual Data Analytics at EI 2023, Jan 2023, San Francisco, CA
- [RTNN: Accelerating Neighbor Search Using Hardware Ray Tracing](#)
PPoPP 2022, April 2022, Virtual
- [Tail Latency in Node.js: Energy Efficient Turbo Boosting for Long Latency Requests in Event-Driven Web Services](#)
VEE 2019, April 2019, Providence, RI
- [Algorithm-SoC Co-design for Energy-Efficient Mobile Continuous Vision](#)
ISCA 2018, June 2018, Los Angeles, CA
- [GreenWeb: Language Extensions for Energy-Efficient Mobile Web Computing](#)
PLDI 2016, June 2016, Santa Barbara, CA
- [Energy and Power Measurement on Mobile Devices](#)
MobiTools co-located with ISCA 2016, June 2016, Seoul, Korea
- [The Human Processing Unit \(HPU\) as a New Approximate Computing Substrate](#)
WAX 2016 co-located with ASPLOS 2016, April 2016, Atlanta, GA
- [Scalable End-to-end Quality Control in Approximate Computing](#)
WAX 2016 co-located with ASPLOS 2016, April 2016, Atlanta, GA
- [Microarchitectural Implications of Event-driven Server-side Web Applications](#)
MICRO 2015, December 2015, Waikiki, HI (lightning version)
- [Exploiting Webpage Characteristics for Energy-Efficient Mobile Web Browsing](#)
Best of CAL 2014 presented at HPCA 2015, February 2015, San Francisco, CA
- [Event-Based Scheduling for Energy-Efficient QoS \(eQoS\) in Mobile Web Applications](#)
HPCA 2015, February 2015, San Francisco, CA
- [WebCore: Architectural Support for Mobile Web Browsing](#)
ISCA 2014, June 2014, Minneapolis, MN (lightning version)
- [High-Performance and EnergyEfficient Mobile Web Browsing on Big/Little Systems](#)
HPCA 2013, February 2013, Shenzhen, China
- [Hermes: An Integrated CPU/GPU Microarchitecture for IP Routing](#)
DAC 2011, June 2011, San Diego, CA

SOFTWARE

See the [GitHub page](#) of the Horizon Lab.

EXTERNAL SERVICE

Program Committee

- [ISCA](#): 2023 (ERC), 2022 (ERC), 2020, 2019, 2017 (ERC)
- [HPCA](#): 2022, 2019, 2018 (ERC)
- [MICRO](#): 2022, 2021 (ERC), 2020 (ERC), 2019
- [MICRO SRC](#): 2022

- [SC](#): 2022
- [IPDPS](#): 2023
- [HPCI](#): 2022
- [ECCV](#): 2022
- [ICCV](#): 2021
- [IEEE VR](#): 2023
- [CVPR](#): 2022, 2021, 2020
- [ICLR](#): 2022, 2021, 2020
- [AAAI](#): 2022, 2021
- [NeurIPS](#): 2022, 2021, 2020
- [WACV](#): 2021
- [ACCV](#): 2020
- [ISLPED](#): 2021
- [IISWC](#): 2021, 2019
- [ISPASS](#): 2022, 2019
- IEEE Micro Top Picks: 2018
- [HCOMP](#): 2016
- [CGO-PPoPP Artifacts Evaluation](#): 2016, 2015
- [TinyToCS](#) Volume IV, III

Solicited Reviewer

- [IEEE VR](#) (2021), [IEEE TCC](#) (2022), [IEEE ISMAR](#) (2022), [ACM TOCS](#) (2022, 2019), [ASPLOS](#) (2021), [IEEE TNNLS](#) (2021, 2020), [IEEE TSUSC](#) (2020), [ACM TWEB](#) (2020), [IEEE TC](#) (2020, 2019), [IEEE CAL](#) (2022, 2021, 2020, 2018, 2017), [IEEE TMC](#) (2017), [IEEE Micro](#) (2022, 2020, 2019, 2018, 2017), [ACM TACO](#) (2019, 2018, 2016), [IEEE ESL](#) (2015), [ACM TODAES](#) (2011), [ICS](#) (2018), [DAC](#) (2012, 2011)

Workshop and Tutorial Organizations

- Workshop and Tutorial Co-Chair, IEEE/ACM International Symposium on Microarchitecture ([MICRO](#)), 2022
- Co-chair: Artifact Evaluation Committee, IEEE International Symposium on Workload Characterization ([IISWC](#)), 2022
- Co-organizer: RSS2: Workshop on Robustness and Safe Software 2.0 ([RSS2](#)) co-located with ASPLOS 2022, 2021
- Co-chair: International Workshop on Performance Analysis of Machine Learning Systems ([FastPath](#)) co-located with ISPASS 2021
- Organizer: Infrastructure and Methodology for SoC Performance and Power Modeling Tutorial co-located with IISWC 2018, ASPLOS 2019, [ISCA 2019](#)
- Organizer: [Cognitive Edge Computing](#) Workshop co-located with MICRO 2017
- Co-chair: [Sensors to Cloud Architectures](#) Workshop co-located with HPCA 2017
- Web chair: [Cognitive Edge Computing](#) Workshop co-located with MICRO 2016
- Organizer: [MobiTools](#) Workshop co-located with ISCA 2016

DEPARTMENTAL SERVICE

- *PhD Admissions Committee*, 2022-2023, 2021-2022, 2020-2021, 2019-2020, 2018-2019
- *MS Admissions Committee*, 2021-2022
- *Undergraduate Curriculum Committee*, 2021-2022, 2020-2021, 2019-2020
- *Industrial Affiliates Exploration*, 2020-2021
- *Lab Committee*, 2018-2019
- *Colloquium Coordinator*, 2018-2019

OUTREACH ACTIVITIES

University of Rochester Upward Bound Math and Science (<https://www.rochester.edu/college/kearnscenter/pre-college/trio-programs.html#math-science>)

- Taught three-day workshop each summer to high-schoolers from the Vanguard Collegiate High School and Wilson High School
- Used Raspberry Pi as the platform to introduce programming to students, and incrementally built simple computer vision programs such as edge detectors.

Women in Engineering Program (WEP) (<http://www.engr.utexas.edu/wep>)

- Speaker at high school-focused summer camps at UT Austin with an emphasis on inspiring high school female about engineering (~75 high school senior women)
- Mentored two female sophomores in the Graduates Linked with Undergraduates in Engineering (GLUE) Program.

TEACHING EXPERIENCE

Instructor (University of Rochester)

- Spring 2023, CSC 252/452 *Computer Organization*
- Fall 2022, CSC 292/572 *Mobile Visual Computing*
- Fall 2022, CSC 412 *Introduction to Augmented and Virtual Reality* (co-instructor)
- Spring 2022, CSC 252/452 *Computer Organization*
- Fall 2021, CSC 292/572 *Mobile Visual Computing*
- Fall 2021, CSC 412 *Introduction to Augmented and Virtual Reality* (co-instructor)
- Spring 2021, CSC 414 *Selected Topics on Augmented and Virtual Reality* (co-instructor)
- Spring 2021, CSC 252/452 *Computer Organization*
- Fall 2020, CSC 292/572 *Mobile Visual Computing*
- Fall 2020, CSC 412 *Introduction to Augmented and Virtual Reality* (co-instructor)
- Spring 2020, CSC 252/452 *Computer Organization*
- Spring 2019, CSC 252/452 *Computer Organization*
- Fall 2018, CSC 292/572 *Mobile Systems Architecture*
- Spring 2018, CSC 252/452 *Computer Organization*

Teaching Assistant (UT Austin)

- Spring 2013, *Dynamic Compilation*, with Vijay Janapa Reddi
- Spring 2011, *Computer Architecture*, with Yale N. Patt
- Fall 2010, *Introduction to Embedded Systems*, with Jonathan W. Valvano

MENTORING

University of Rochester

Ph.D.:

- Yu Feng
- Yiming Gan
- Abhishek Tyagi
- Nisarg Ujjainkar

M.S.:

- Raj Rajwade
- Suumil Roy

Undergraduate:

- Ethan Chen
- Ethan Shahan
- Matan Kotler-Berkowitz
- Junhua Huang

Alumni:

- Shreyan Goswami (M.S. 2022)
- Zeyi Pan (M.S. 2021)
- Hanlin Gao (M.S. 2021)
- Yi Yang (M.S. 2021)
- Chi-chun Chen (M.S. 2019; now at Cray Inc.)
- Boyuan Tian (M.S. 2019; now at UIUC)
- Tianqi Yang (M.S. 2020; now at Amazon)
- Tiancheng Xu (M.S. 2020; now at Rice University)
- Christopher Bruinsma (Spring 2022)
- Jiayi He (Spring 2022)
- Jennifer Yu (Spring 2022)
- Meisen Hu (Summer 2022)
- Ruihan Xu (Summer 2022)
- Muhammad Qasim (Summer 2022)
- Shengyi Jia (Summer 2022)
- Nikhil Khanna (Summer 2022)
- Edmund Sepeku (B.S. 2022; Spring 2021)
- Kharissa King (Spring 2021)
- Elias Neuman-Donihue (B.S. 2022; Summer 2021–Spring 2022)
- Samuel Triest (B.S. 2020; now at CMU)
- Yawo Alphonse Siatitse (B.S. 2020; now at John Hopkins University)
- Qiuyue Sun (B.S. 2020; now at ByteDance)
- Sifan Ye (B.S. 2020; now at Stanford University)
- Weituo Kong (B.S. 2020; now at Brown University)
- Oliver Zhang (now at Univ. of Michigan)

- Noah Helterbrand (B.S. 2020)
- Tolga Furkan Aktas (B.S. 2020)
- Jessica Ervin (B.S. 2020)

Previously at UT Austin

- Hannah Peeler, Undergraduate student, 2016 (now at Arm Research)
- Janna Tulabot, Undergraduate student, 2016
- Matthew Halpern, Ph.D. student, 2013 - 2017 (now at Google)
- Wenzhi Cui, Ph.D. student, 2015 - 2017 (now at Google)

DISSERTATION COMMITTEE

Ph.D. Candidate

- Sayak Chakraborti (CS, proposed in 2020): *Opportunistic Resource Management: Resource Utilization in Datacenters*
- David Lippman (Optics, proposed in 2021): *Freeform gradient-index optical design and metrology for reduced system size and weight*
- Uday Kumar Redd Vengalam (ECE)
- Irving Barron (ECE)

Ph.D.

- Divya Ojha (CS, 2022): *Defending Against Microarchitectural Side Channel Leaks*
- Haichuan Yang (CS, 2020): *Sparse Learning for Model Optimization*
- Daniel Nikolov (Optics, 2020): *Software and Hardware Enabling the Next-Generation Near-Eye Displays*
- Kan Xu (ECE, 2020): *Power Delivery in High Current 3-D Systems*
- Hoda Sadat Ayatollahi Tabatabaei (ECE, 2018): *Energy Balancing in Wireless Networks with MIMO Communications*

M.S.

- Yiwen Fan (Optics, 2020): *Numerical Calculation of Zernike Polynomials and the Sample Selection Method of NURBS Spline Generation*

B.S.

- Sifan Ye (CS, 2020): *3D Reconstruction from Colored Point Clouds with Detail Transfer*
- Samuel Triest (CS, 2020): *Unsupervised Reinforcement Learning in Environments with Strong Priors*
- Benned Hedegaard (CS, 2022): *Sign-Informed Semantic Mapping for Language Interaction*
- Elias Neuman-Donihue (CS, 2022): *Fast Rendering of Massive Point Clouds*