Vijay Janapa Reddi, Ph.D.

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Current Position

John L. Loeb Associate Professor of Engineering and Applied Sciences
John A. Paulson School of Engineering and Applied Sciences
Harvard University

Primary Research Areas

Computer Architecture; Machine Learning Systems; Autonomous Agents/Robotics

Education

2010   Ph.D. in Computer Science, Harvard University
2006   M.S. in Electrical and Computer Engineering, University of Colorado—Boulder
2003   B.S. in Computer Engineering, Santa Clara University

Current and Previous Academic Positions

2019/–   *Associate Professor*, Harvard University
2018/–   *Adjunct Associate Professor*, The University of Texas at Austin
2017/2018   *Associate Professor*, The University of Texas at Austin
2011/2017   *Assistant Professor*, The University of Texas at Austin

Other Industry Experience

2024/-   *Visiting Researcher*, Google (Research)
2022/2023   *Visiting Researcher*, Google (DeepMind)
2020/2021   *Visiting Researcher*, Google (Tensor Flow Ecosystem)
2019/2019   *Visiting Researcher*, Facebook (AR Silicon Team)
2017/2018   *Visiting Researcher*, Google (gChips)
2015/2016   *Consultant*, Intel

2015/2016	*Consultant*, Advanced Micro Devices (AMD)
2014/2014	*Consultant*, Intel
2010/2011	*Senior Design Engineer*, Advanced Micro Devices (AMD)
2009/2009	*Research Intern*, Microsoft Research
2007/2009	*Research Intern*, VMware
2003/2006	*Research Intern*, Intel

Honors and Awards

2025	IEEE Micro Top Picks in Computer Architecture (Conditionally Accepted)
2024	Best Paper Award, Vail Computer Elements Workshop (VCEW)
2023	MLPerf Inference selected for inclusion in ISCA@50 25-Year Retrospective
2023	IEEE Micro Top Picks in Computer Architecture (Honorable Mention)
2022	IEEE Micro Top Picks in Computer Architecture (Honorable Mention)
2021	BenchCouncil Rising Star Award, International Open Benchmark Council
2021	Deploying TinyML on HarvardX/edX: 100 Most Popular Free Online Courses, ClassCentral
2021	Best Course in AI: Tiny Machine Learning (TinyML) on HarvardX/edX, CogX Awards
2021	IEEE Micro Top Picks in Computer Architecture
2021	Best of Computer Architecture Letters (CAL), Editorial Board of IEEE CAL
2020	Programming Languages Software Award, ACM SIGPLAN
2020	Best Research Paper Award, Design Automation Conference (DAC)
2020	Google Faculty Research Award, Google
2019	Best Paper Nominee, IEEE International Symposium on Perf. Analysis of Systems and Software (IS-PASS)
2019	Intl Symp. on High-Performance Computer Architecture (HPCA) Hall of Fame
2018	International Symp. on Microarchitecture (MICRO) Hall of Fame
2018	ACM SIGARCH CS TCCA Outstanding Dissertation Award (Advisee: Yuhao Zhu)
2017	IEEE Micro Top Picks in Computer Architecture
2017	Best Paper Nominee, Design Automation Conference (DAC)
2017	Google Faculty Research Award
2016	IEEE TCCA Young Computer Architect Award
2016	IEEE Micro Top Picks in Computer Architecture (Honorable Mention)
2016	Gilbreth Lectureship Honor, National Academy of Engineering (NAE)
2015	ACM SIGPLAN Most Influential PLDI Paper Award
2015	Google Faculty Research Award
2014	Best of Computer Architecture Letters (CAL) Award
2014	Best Paper Nominee, IEEE International Symposium on MicroarchitectureLow Power Electronics and Design (ISLPED)
2014	Indo-American Frontiers of Engineering, National Academy of Engineering (NAE)
2013	Google Faculty Research Award
2013	Intel Early Career Award
2012	Google Faculty Research Award
2011	IEEE Micro Top Picks in Computer Architecture

2010	IEEE Micro Top Picks in Computer Architecture
2009	Best Paper Award, International Symposium on High-Performance Computer Architecture (HPCA)
2008	John A. and Elizabeth S. Armstrong Fellowship, Harvard University
2007	Best Student Presentation, International Symposium on Code Generation and Optimization (CGO)
2006	IEEE Micro Top Picks in Computer Architecture
2005	Best Paper Award, International Symposium on MicroarchitectureMicroarchitecture (MICRO)
2003	Faculty Recognition for Technical Excellence, Santa Clara University
2003	Outstanding Undergraduate (Honorable), Computing Research Association (CRA)

University Committee Assignments

Harvard John A. Paulson School of Engineering and Applied Sciences

2023/2024	Member, Engineering Sciences Committee on Higher Degrees
2023	Member, Generative AI Steering Committee
2020	Member, Quantum Faculty Recruiting Committee
2019	Member, Robotics Faculty Recruiting Committee
2019/-	Graduate Student Admissions Committee

The University of Texas at Austin

2016	Member, Faculty Recruiting Committee
2015	Member, Faculty Recruiting Committee
2014	Member, Technology in Teaching
2013	Member, Faculty Recruiting Committee
2011/2016	Graduate Student Admissions Committee

Professional Society and Major Governmental Committees

Membership

Institute of Electrical and Electronics Engineers (IEEE)
Association for Computing Machinery (ACM)

MLCommons and MLPerf

2019-/	Vice-Chair (on the Board of Directors), MLCommons (http://mlcommons.org)
2019-/	Vice President, MLCommons
2019-/	MLCommons Research Co-Chair, MLCommons
2019/2020	MLPerf Tiny Co-Chair, MLPerf (http://mlperf.org)
2018/2020	MLPerf Inference Co-Chair, MLPerf

IRDS

2020/2023	International Roadmap for Devices and Systems (IRDS)

SIGARCH

2017/2020   Associate Editor, SIGARCH Blog (http://sigarch.org/blog/)

Professional Service

General Chair

2023   Tiny Machine Learning Research Symposium (TinyML)
2022   Tiny Machine Learning Research Symposium (TinyML)
2021   Tiny Machine Learning Research Symposium (TinyML)
2017   IEEE/ACM International Symposium on Code Generation and Optimization (CGO)

Program Chair

2019   IEEE International Symposium on Workload Characterization (IISWC)
2014   IEEE/ACM International Symposium on Code Generation and Optimization (CGO)

Program Committee

2025   Conference on Neural Information Processing Systems (NeurIPS)
2025   IEEE/ACM International Symposium on Microarchitecture (MICRO)
2024   IEEE/ACM International Symposium on Microarchitecture (MICRO)
2023   IEEE International Symposium on High-Performance Computer Architecture (HPCA)
2023   International Symposium on Computer Architecture (ISCA)
2023   Sixth Conference on Machine Learning and Systems (MLSys)
2023   IEEE/ACM International Symposium on Microarchitecture (MICRO)
2022   IEEE/ACM International Symposium on Code Generation and Optimization (CGO)
2022   International Symposium on Computer Architecture (ISCA)
2022   Fifth Conference on Machine Learning and Systems (MLSys)
2021   ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)
2021   IEEE Micro Top Picks
2021   IEEE/ACM International Symposium on Code Generation and Optimization (CGO)
2021   IEEE International Symposium on High-Performance Computer Architecture (HPCA)
2020   IEEE/ACM International Symposium on Code Generation and Optimization (CGO)
2020   International Symposium on Computer Architecture (ISCA)
2020   IEEE/ACM International Symposium on Microarchitecture (MICRO)
2019   ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) (ERC)
2019   IEEE Micro Top Picks
2019   IEEE/ACM International Symposium on Code Generation and Optimization (CGO)
2019   International Symposium on Computer Architecture (ISCA)
2019   IEEE/ACM International Symposium on Microarchitecture (MICRO)
2018   International Symposium on Computer Architecture (ISCA) (ERC)

2018   IEEE Micro Top Picks

2018   IEEE/ACM International Symposium on Microarchitecture (MICRO)

2018   IEEE International Symposium on Workload Characterization (IISWC)

2017   IEEE International Symposium on High-Performance Computer Architecture (HPCA) (ERC)

2017   International Symposium on Computer Architecture (ISCA)

2017   IEEE/ACM International Symposium on Microarchitecture (MICRO)

2016   IEEE International Symposium on High-Performance Computer Architecture (HPCA) (ERC)

2016   IEEE Micro Top Picks

2016   IEEE/ACM International Symposium on Code Generation and Optimization (CGO)

2016   IEEE International Symposium on Workload Characterization (IISWC)

2015   International Symposium on Computer Architecture (ISCA) (ERC)

2015   IEEE International Symposium on High-Performance Computer Architecture (HPCA)

2015   IEEE/ACM International Symposium on Code Generation and Optimization (CGO)

2015   IEEE/ACM International Symposium on Microarchitecture (MICRO)

2015   International Symposium on Performance Analysis of Systems and Software (ISPASS)

2015   International Symposium on Principles and Practice of Parallel Computing (PPoPP)

2015   IEEE International Symposium on Workload Characterization (IISWC)

2014   IEEE International Symposium on High-Performance Computer Architecture (HPCA)

2014   IEEE/ACM International Symposium on Code Generation and Optimization (CGO)

2014   IEEE/ACM International Symposium on Microarchitecture (MICRO)

2013   IEEE International Symposium on Workload Characterization (IISWC)

Organizing Committee

2023   Data-centric Machine Learning Research (DMLR) Workshop (ICML)

2020   ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)

2017   Design Automation Conference

2016-2017   Workshop on Cognitive Edge Computing (CogEdge)

2016   Tutorial on Tools for Mobile Computer Architecture (MobiTools)

2015   IEEE/ACM International Symposium on Code Generation and Optimization

2016   IEEE International Symposium on Microarchitecture

2015-2016   Tutorial on Simulation and Analysis Engine (ISCA, ASPLOS, HPCA, ICS, IISWC, ISPASS)

2013   IEEE International Symposium on Workload Characterization

2012   IEEE International Symposium on Performance Analysis of Systems and Software

2013   IEEE International Symposium on Performance Analysis of Systems and Software.

Guest Editor

2023   IEEE Micro Special Issue on Tiny Machine Learning

2016   IEEE Micro Special Issue on Internet of Things

2013   IEEE Micro Special Issue on Reliability-Aware Microarchitecture Design

2013   Intl. Symp. on Performance Analysis of Systems and Software (ISPASS)

2015, 2016   Workshop on Silicon Errors in Logic: System Effects (SELSE).

Publications Chair

2013   Intl. Symp. on Workload Characterization (IISWC)

Community Activities

Tiny Machine Learning Open Education Initiative, https://tinyml.seas.harvard.edu (Founder)

Hands-on Computer Science (HaCS) for Austin Independent School District (via UT Outreach), https://outreach.uteach.utexas.edu/uteach-outreach-cs-service-learning-program

Publications

As of February 14, 2024, my research publications have accumulated a total of 17,132 citations with an h-index of 53, as reported by Google Scholar.

The most current list of publications can be accessed at the following link on Google Scholar.

Conference Publications

1   Maximilian Lam, Jeff Johnson, Wenjie Xiong, Kiwan Maeng, Udit Gupta, Yang Li, Liangzhen Lai, Ilias Leontiadis, Minsoo Rhu, Hsien-Hsin S. Lee, **Vijay Janapa Reddi**, Gu-Yeon Wei, David Brooks, and G. Edward Suh. "GPU-based Private Information Retrieval for On-Device Machine Learning Inference". In: *Proceedings of the 29th ACM International Conference on Architectural Support for Programming Languages and Operating Systems, Volume 1, ASPLOS 2024, La Jolla, CA, USA, 27 April 2024- 1 May 2024*. ACM, 2024, pp. 197–214. DOI: 10.1145/3617232.3624855. URL: https://doi.org/10.1145/3617232.3624855.

2   Sabrina M. Neuman, Brian Plancher, and **Vijay Janapa Reddi**. "Invited: The Magnificent Seven Challenges and Opportunities in Domain-Specific Accelerator Design for Autonomous Systems". In: *Proceedings of the 61st ACM/IEEE Design Automation Conference, DAC 2024, San Francisco, CA, USA, June 23-27, 2024*. ACM, 2024, 367:1–367:4. DOI: 10.1145/3649329.3663515. URL: https://doi.org/10.1145/3649329.3663515.

3   Brian Plancher, Sebastian Büttrich, Jeremy Ellis, Neena Goveas, Laila D. Kazimierski, Jesús Alfonso López Sotelo, Milan Lukic, Diego Mendez, Rosdiadee Nordin, Andrés Oliva Trevisan, Massimo Pavan, Manuel Roveri, Marcus Rüb, Jackline Tum, Marian Verhelst, Salah Abdeljabar, Segun Adebayo, Thomas Amberg, Halleluyah Aworinde, José Bagur, Gregg Barrett, Nabil Benamar, Bharat S. Chaudhari, Ronald Criollo, David Cuartielles, José A. Ferreira Filho, Solomon Gizaw, Evgeni Gousev, Alessandro Grande, Shawn Hymel, Peter Ing, Prashant Manandhar, Pietro Manzoni, Boris Murmann, Eric Pan, Rytis Paskauskas, Ermanno Pietrosemoli, Tales C. Pimenta, Marcelo Rovai, Marco Zennaro, and **Vijay Janapa Reddi**. "TinyML4D: Scaling Embedded Machine Learning Education in the Developing World". In: *Proceedings of the AAAI 2024 Spring Symposium Series, Stanford, CA, USA, March 25-27, 2024*. AAAI Press, 2024, pp. 508–515. DOI: 10.1609/AAAISS.V3I1.31265. URL: https://doi.org/10.1609/aaaiss.v3i1.31265.

4   Jessica Quaye, Alicia Parrish, Oana Inel, Charvi Rastogi, Hannah Rose Kirk, Minsuk Kahng, Erin van Liemt, Max Bartolo, Jess Tsang, Justin White, Nathan Clement, Rafael Mosquera, Juan Ciro, **Vijay Janapa Reddi**, and Lora Aroyo. "Adversarial Nibbler: An Open Red-Teaming Method for Identifying Diverse Harms in Text-to-Image Generation". In: *The 2024 ACM Conference on Fairness, Accountability, and Transparency, FAccT 2024, Rio de Janeiro, Brazil, June 3-6, 2024*. ACM, 2024, pp. 388–406. DOI: 10.1145/3630106.3658913. URL: https://doi.org/10.1145/3630106.3658913.

5   **Vijay Janapa Reddi**. "MLSysBook.AI: Principles and Practices of Machine Learning Systems Engineering". In: *International Conference on Hardware/Software Codesign and System Synthesis, CODES+ISSS 2024, Raleigh, NC, USA, September 29 - Oct. 4, 2024*. IEEE, 2024, pp. 41–42. DOI: 10.1109/CODES-ISSS60120.2024.00015. URL: https://doi.org/10.1109/CODES-ISSS60120.2024.00015.

6   Víctor Mayoral Vilches, Jason Jabbour, Yu-Shun Hsiao, Zishen Wan, Martiño Crespo-Álvarez, Matthew Stewart, Juan Manuel Reina-Muñoz, Prateek Nagras, Gaurav Vikhe, Mohammad Bakhshalipour, Martin Pinzger, Stefan Rass, Smruti Panigrahi, Giulio Corradi, Niladri Roy, Phillip B. Gibbons, Sabrina M. Neuman, Brian Plancher, and **Vijay Janapa Reddi**. "RobotPerf: An Open-Source, Vendor-Agnostic, Benchmarking Suite for Evaluating Robotics Computing System Performance". In: *IEEE International Conference on Robotics and Automation, ICRA 2024, Yokohama, Japan, May 13-17, 2024*. IEEE, 2024, pp. 8288–8297. DOI: 10.1109/ICRA57147.2024.10610841. URL: https://doi.org/10.1109/ICRA57147.2024.10610841.

7   Zishen Wan, Nandhini Chandramoorthy, Karthik Swaminathan, Pin-Yu Chen, Kshitij Bhardwaj, **Vijay Janapa Reddi**, and Arijit Raychowdhury. "MulBERRY: Enabling Bit-Error Robustness for Energy-Efficient Multi-Agent Autonomous Systems". In: *Proceedings of the 29th ACM International Conference on Architectural Support for Programming Languages and Operating Systems, Volume 2, ASPLOS 2024, La Jolla, CA, USA, 27 April 2024- 1 May 2024*. ACM, 2024, pp. 746–762. DOI: 10.1145/3620665.3640420. URL: https://doi.org/10.1145/3620665.3640420.

8   Biyan Zhou, Pao-Sheng Vincent Sun, Jason Yik, Charlotte Frenkel, **Vijay Janapa Reddi**, and Arindam Basu. "Grand Challenge on Neural Decoding for Motor Control of non-Human Primates". In: *IEEE Biomedical Circuits and Systems Conference, BioCAS 2024, Xi'an, China, October 24-26, 2024*. IEEE, 2024, pp. 1–5. DOI: 10.1109/BIOCAS61083.2024.10798373. URL: https://doi.org/10.1109/BioCAS61083.2024.10798373.

9   Colby R. Banbury, **Vijay Janapa Reddi**, Alexander Elium, Shawn Hymel, David Tischler, Daniel Situnayake, Carl Ward, Louis Moreau, Jenny Plunkett, Matthew Kelcey, Mathijs Baaijens, Alessandro Grande, Dmitry Maslov, Arthur Beavis, Jan Jongboom, and Jessica Quaye. "Edge Impulse: An MLOps Platform for Tiny Machine Learning". In: *Proceedings of the Sixth Conference on Machine Learning and Systems, MLSys 2023, Miami, FL, USA, June 4-8, 2023*. mlsys.org, 2023. URL: https://proceedings.mlsys.org/paper%5C_files/paper/2023/hash/49fe55f5e9574714dda575bfb2177662-Abstract-mlsys2023.html.

10 Yu-Shun Hsiao, Siva Kumar Sastry Hari, Balakumar Sundaralingam, Jason Yik, Thierry Tambe, Charbel Sakr, Stephen W. Keckler, and **Vijay Janapa Reddi**. "VaPr: Variable-Precision Tensors to Accelerate Robot Motion Planning". In: *IROS*. 2023, pp. 6304–6309. DOI: 10.1109/IROS55552.2023.10342109. URL: https://doi.org/10.1109/IROS55552.2023.10342109.

11 Yu-Shun Hsiao, Zishen Wan, Tianyu Jia, Radhika Ghosal, Abdulrahman Mahmoud, Arijit Raychowdhury, David Brooks, Gu-Yeon Wei, and **Vijay Janapa Reddi**. "MAVFI: An End-to-End Fault Analysis Framework with Anomaly Detection and Recovery for Micro Aerial Vehicles". In: *Design, Automation & Test in Europe Conference & Exhibition, DATE 2023, Antwerp, Belgium, April 17-19, 2023*. IEEE, 2023, pp. 1–6. DOI: 10.23919/DATE56975.2023.10137246. URL: https://doi.org/10.23919/DATE56975.2023.10137246.

12 Srivatsan Krishnan, Amir Yazdanbakhsh, Shvetank Prakash, Jason Jabbour, Ikechukwu Uchendu, Susobhan Ghosh, Behzad Boroujerdian, Daniel Richins, Devashree Tripathy, Aleksandra Faust, and **Vijay Janapa Reddi**. "ArchGym: An Open-Source Gymnasium for Machine Learning Assisted Architecture Design". In: *Proceedings of the 50th Annual International Symposium on Computer Architecture, ISCA 2023, Orlando, FL, USA, June 17-21, 2023*. ACM, 2023, 14:1–14:16. DOI: 10.1145/3579371.3589049. URL: https://doi.org/10.1145/3579371.3589049.

13 Hyoukjun Kwon, Krishnakumar Nair, Jamin Seo, Jason Yik, Debabrata Mohapatra, Dongyuan Zhan, Jinook Song, Peter Capak, Peizhao Zhang, Peter Vajda, Colby R. Banbury, Mark Mazumder, Liangzhen Lai, Ashish Sirasao, Tushar Krishna, Harshit Khaitan, Vikas Chandra, and **Vijay Janapa Reddi**. "XR-Bench: An Extended Reality (XR) Machine Learning Benchmark Suite for the Metaverse". In: *Proceedings of the Sixth Conference on Machine Learning and Systems, MLSys 2023, Miami, FL, USA, June 4-8, 2023*. mlsys.org, 2023. URL: https://proceedings.mlsys.org/paper%5C_files/paper/2023/hash/07b7c2f8a6978e376f9656d69619bfbb-Abstract-mlsys2023.html.

14 Mark Mazumder, Colby R. Banbury, Xiaozhe Yao, Bojan Karlas, William Gaviria Rojas, Sudnya Frederick Diamos, Greg Diamos, Lynn He, Alicia Parrish, Hannah Rose Kirk, Jessica Quaye, Charvi Rastogi, Douwe Kiela, David Jurado, David Kanter, Rafael Mosquera, Will Cukierski, Juan Ciro, Lora Aroyo, Bilge Acun, Lingjiao Chen, Mehul Raje, Max Bartolo, Evan Sabri Eyuboglu, Amirata Ghorbani, Emmett D. Goodman, Addison Howard, Oana Inel, Tariq Kane, Christine R. Kirkpatrick, D. Sculley, Tzu-Sheng Kuo, Jonas W. Mueller, Tristan Thrush, Joaquin Vanschoren, Margaret Warren, Adina Williams, Serena Yeung, Newsha Ardalani, Praveen K. Paritosh, Ce Zhang, James Y. Zou, Carole-Jean Wu, Cody Coleman, Andrew Y. Ng, Peter Mattson, and **Vijay Janapa Reddi**. "DataPerf: Benchmarks for Data-Centric AI Development". In: *Advances in Neural Information Processing Systems 36: Annual Conference on Neural Information Processing Systems 2023, NeurIPS 2023, New Orleans, LA, USA, December 10 - 16, 2023*. 2023. URL: http://papers.nips.cc/paper%5C_files/

paper/2023/hash/112db88215e25b3ae2750e9eefcded94-Abstract-Datasets%5C_
and%5C_Benchmarks.html.

15   Sabrina M. Neuman, Radhika Ghosal, Thomas Bourgeat, Brian Plancher, and **Vijay Janapa Reddi**. "RoboShape: Using Topology Patterns to Scalably and Flexibly Deploy Accelerators Across Robots". In: *Proceedings of the 50th Annual International Symposium on Computer Architecture, ISCA 2023, Orlando, FL, USA, June 17-21, 2023*. ACM, 2023, 69:1–69:13. DOI: 10.1145/3579371.3589104. URL: https://doi.org/10.1145/3579371.3589104.

16   Thanh Thi Nguyen, Minh Cuong Nguyen, Thien Huynh-The, Quoc-Viet Pham, Quoc Viet Hung Nguyen, Imran Razzak, and **Vijay Janapa Reddi**. "Solving Complex Sequential Decision-Making Problems by Deep Reinforcement Learning with Heuristic Rules". In: *Computational Science - ICCS 2023 - 23rd International Conference, Prague, Czech Republic, July 3-5, 2023, Proceedings, Part II*. Vol. 14074. Lecture Notes in Computer Science. Springer, 2023, pp. 298–305. DOI: 10.1007/978-3-031-36021-3_30. URL: https://doi.org/10.1007/978-3-031-36021-3%5C_30.

17   Shvetank Prakash, Tim Callahan, Joseph Bushagour, Colby R. Banbury, Alan V. Green, Pete Warden, Tim Ansell, and **Vijay Janapa Reddi**. "CFU Playground: Full-Stack Open-Source Framework for Tiny Machine Learning (TinyML) Acceleration on FPGAs". In: *IEEE International Symposium on Performance Analysis of Systems and Software, ISPASS 2023, Raleigh, NC, USA, April 23-25, 2023*. IEEE, 2023, pp. 157–167. DOI: 10.1109/ISPASS57527.2023.00024. URL: https://doi.org/10.1109/ISPASS57527.2023.00024.

18   Shvetank Prakash, Tim Callahan, Joseph Bushagour, Colby R. Banbury, Alan V. Green, Pete Warden, Tim Ansell, and **Vijay Janapa Reddi**. "CFU Playground: Want a faster ML processor? Do it yourself!" In: *Design, Automation & Test in Europe Conference & Exhibition, DATE 2023, Antwerp, Belgium, April 17-19, 2023*. IEEE, 2023, pp. 1–2. DOI: 10.23919/DATE56975.2023.10137093. URL: https://doi.org/10.23919/DATE56975.2023.10137093.

19   **Vijay Janapa Reddi** and Amir Yazdanbakhsh. "Architecture 2.0: Challenges and Opportunities". In: *60th ACM/IEEE Design Automation Conference, DAC 2023, San Francisco, CA, USA, July 9-13, 2023*. IEEE, 2023, pp. 1–2. DOI: 10.1109/DAC56929.2023.10247808. URL: https://doi.org/10.1109/DAC56929.2023.10247808.

20   Zishen Wan, Nandhini Chandramoorthy, Karthik Swaminathan, Pin-Yu Chen, **Vijay Janapa Reddi**, and Arijit Raychowdhury. "BERRY: Bit Error Robustness for Energy-Efficient Reinforcement Learning-Based Autonomous Systems". In: *60th ACM/IEEE Design Automation Conference, DAC 2023, San Francisco, CA, USA, July 9-13, 2023*. IEEE, 2023, pp. 1–6. DOI: 10.1109/DAC56929.2023.10247999. URL: https://doi.org/10.1109/DAC56929.2023.10247999.

21   Yu-Shun Hsiao, Siva Kumar Sastry Hari, Michal Filipiuk, Timothy Tsai, Michael B. Sullivan, **Vijay Janapa Reddi**, Vasu Singh, and Stephen W. Keckler. "Zhuyi: perception processing rate estimation for safety in autonomous vehicles". In: *DAC '22: 59th ACM/IEEE Design Automation Conference, San Francisco, California, USA, July 10 - 14, 2022*. ACM, 2022, pp. 289–294. DOI: 10.1145/3489517.3530445. URL: https://doi.org/10.1145/3489517.3530445.

22   Tianyu Jia, En-Yu Yang, Yu-Shun Hsiao, Jonathan J. Cruz, David Brooks, Gu-Yeon Wei, and **Vijay Janapa Reddi**. "OMU: A Probabilistic 3D Occupancy Mapping Accelerator for Real-time OctoMap at the Edge". In: *2022 Design, Automation & Test in Europe Conference & Exhibition, DATE 2022, Antwerp, Belgium, March 14-23, 2022*. IEEE, 2022, pp. 909–914. DOI: 10.23919/DATE54114.2022. 9774508. URL: https://doi.org/10.23919/DATE54114.2022.9774508.

23   Srivatsan Krishnan, Zishen Wan, Kshitij Bhardwaj, Ninad Jadhav, Aleksandra Faust, and **Vijay Janapa Reddi**. "Roofline Model for UAVs: A Bottleneck Analysis Tool for Onboard Compute Characterization of Autonomous Unmanned Aerial Vehicles". In: *International IEEE Symposium on Performance Analysis of Systems and Software, ISPASS 2022, Singapore, May 22-24, 2022*. IEEE, 2022, pp. 162–174. DOI: 10.1109/ISPASS55109.2022.00023. URL: https://doi.org/10.1109/ISPASS55109.2022.00023.

24   Srivatsan Krishnan, Zishen Wan, Kshitij Bhardwaj, Paul N. Whatmough, Aleksandra Faust, Sabrina M. Neuman, Gu-Yeon Wei, David Brooks, and **Vijay Janapa Reddi**. "Automatic Domain-Specific SoC Design for Autonomous Unmanned Aerial Vehicles". In: *55th IEEE/ACM International Symposium on Microarchitecture, MICRO 2022, Chicago, IL, USA, October 1-5, 2022*. IEEE, 2022, pp. 300–317. DOI: 10.1109/MICRO56248.2022.00033. URL: https://doi.org/10.1109/MICRO56248.2022.00033.

25   Sabrina M. Neuman, Brian Plancher, Bardienus Pieter Duisterhof, Srivatsan Krishnan, Colby R. Banbury, Mark Mazumder, Shvetank Prakash, Jason Jabbour, Aleksandra Faust, Guido C. H. E. de Croon, and **Vijay Janapa Reddi**. "Tiny Robot Learning: Challenges and Directions for Machine Learning in Resource-Constrained Robots". In: *4th IEEE International Conference on Artificial Intelligence Circuits and Systems, AICAS 2022, Incheon, Republic of Korea, June 13-15, 2022*. IEEE, 2022, pp. 296–299. DOI: 10.1109/AICAS54282.2022.9870000. URL: https://doi.org/10.1109/AICAS54282.2022.9870000.

26   Brian Plancher, Sabrina M. Neuman, Radhika Ghosal, Scott Kuindersma, and **Vijay Janapa Reddi**. "GRiD: GPU-Accelerated Rigid Body Dynamics with Analytical Gradients". In: *2022 International Conference on Robotics and Automation, ICRA 2022, Philadelphia, PA, USA, May 23-27, 2022*. IEEE, 2022, pp. 6253–6260. DOI: 10.1109/ICRA46639.2022.9812384. URL: https://doi.org/10.1109/ICRA46639.2022.9812384.

27   Brian Plancher and **Vijay Janapa Reddi**. "TinyMLedu: The Tiny Machine Learning Open Education Initiative". In: *SIGCSE 2022: The 53rd ACM Technical Symposium on Computer Science Education, Providence, RI, USA, March 3-5, 2022, Volume 2*. ACM, 2022, p. 1159. DOI: 10.1145/3478432.3499093. URL: https://doi.org/10.1145/3478432.3499093.

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57 **Vijay Janapa Reddi**, David Kanter, Peter Mattson, Jared Duke, Thai Nguyen, Ramesh Chukka, Kenneth Shiring, Koan-Sin Tan, Mark Charlebois, William Chou, Mostafa El-Khamy, Jungwook Hong, Michael Buch, Cindy Trinh, Thomas Atta-fosu, Fatih Çakir, Masoud Charkhabi, Xiaodong Chen, Jimmy Chiang, Dave Dexter, Woncheol Heo, Guenther Schmuelling, Maryam Shabani, and Dylan Zika. "MLPerf Mobile Inference Benchmark: Why Mobile AI Benchmarking Is Hard and What to Do About It". In: *CoRR* abs/2012.02328 (2020). arXiv: 2012.02328. URL: https://arxiv.org/abs/2012.02328.

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62 Matthew Halpern, Behzad Boroujerdian, Todd W. Mummert, Evelyn Duesterwald, and **Vijay Janapa Reddi**. "One Size Does Not Fit All: Quantifying and Exposing the Accuracy-Latency Trade-off in Machine Learning Cloud Service APIs via Tolerance Tiers". In: *CoRR* abs/1906.11307 (2019). arXiv: 1906.11307. URL: http://arxiv.org/abs/1906.11307.

63 Mark D. Hill and **Vijay Janapa Reddi**. "Accelerator-level Parallelism". In: *CoRR* abs/1907.02064 (2019). arXiv: 1907.02064. URL: http://arxiv.org/abs/1907.02064.

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67 Thanh Thi Nguyen and **Vijay Janapa Reddi**. "Deep Reinforcement Learning for Cyber Security". In: *CoRR* abs/1906.05799 (2019). arXiv: 1906.05799. URL: http://arxiv.org/abs/1906.05799.

68 **Vijay Janapa Reddi**, Christine Cheng, David Kanter, Peter Mattson, Guenther Schmuelling, Carole-Jean Wu, Brian Anderson, Maximilien Breughe, Mark Charlebois, William Chou, Ramesh Chukka, Cody Coleman, Sam Davis, Pan Deng, Greg Diamos, Jared Duke, Dave Fick, J. Scott Gardner, Itay Hubara, Sachin Idgunji, Thomas B. Jablin, Jeff Jiao, Tom St. John, Pankaj Kanwar, David Lee, Jeffery Liao, Anton Lokhmotov, Francisco Massa, Peng Meng, Paulius Micikevicius, Colin Osborne, Gennady Pekhimenko, Arun Tejusve Raghunath Rajan, Dilip Sequeira, Ashish Sirasao, Fei Sun, Hanlin Tang, Michael Thomson, Frank Wei, Ephrem Wu, Lingjie Xu, Koichi Yamada, Bing Yu, George Yuan, Aaron Zhong, Peizhao Zhang, and Yuchen Zhou. "MLPerf Inference Benchmark". In: *CoRR* abs/1911.02549 (2019). arXiv: 1911.02549. URL: http://arxiv.org/abs/1911.02549.

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72 Mikhail Kazdagli, Ling Huang, **Vijay Janapa Reddi**, and Mohit Tiwari. "EMMA: A New Platform to Evaluate Hardware-based Mobile Malware Analyses". In: *CoRR* abs/1603.03086 (2016). arXiv: 1603.03086. URL: http://arxiv.org/abs/1603.03086.

Workshop Papers

1 Jayashree Mohan, Dhathri Purohith, Matthew Halpern, Vijay Chidambaram, and **Vijay Janapa Reddi**. "Storage on Your SmartPhone Uses More Energy Than You Think". In: *9th USENIX Workshop on Hot Topics in Storage and File Systems, HotStorage 2017, Santa Clara, CA, USA, July 10-11, 2017*. USENIX Association, 2017. URL: https://www.usenix.org/conference/hotstorage17/program/presentation/mohan.

2 Alex Shye, Matthew Iyer, Tipp Moseley, David Hodgdon, Dan Fay, **Vijay Janapa Reddi**, and Daniel A. Connors. "Analysis of path profiling information generated with performance monitoring hardware". In: *9th Annual Workshop on Interaction between Compilers and Computer Architectures, INTERACT-9 2005, San Francisco, California, USA, February 13, 2005*. IEEE Computer Society, 2005, pp. 34–43. DOI: 10.1109/INTERACT.2005.3. URL: https://doi.org/10.1109/INTERACT.2005.3.

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4 **Vijay Janapa Reddi**, Alex Settle, Daniel A. Connors, and Robert S. Cohn. "PIN: a binary instrumentation tool for computer architecture research and education". In: *Proceedings of the 2004 workshop on Computer architecture education - Held in conjunction with the 31st International Symposium on Computer Architecture, WCAE@ISCA 2004, Munich, Germany, June 19, 2004*. ACM, 2004, p. 22. DOI: 10.1145/1275571.1275600. URL: https://doi.org/10.1145/1275571.1275600.

Talks

10/2024 *"MLSysBook.AI: Principles and Practices of Machine Learning Systems Engineering."* Embedded Systems Week (ESWEEK), Virtual.

09/2024 *"Architecture 2.0."* International Symposium on Workload Characterization (IISWC). **(Keynote)**.

9/2024 *"Architecture 2.0: Challenges and Opportunities for tinyML."* tinyAI Forum on Generative AI on the Edge, Virtual.

6/2024 *"Architecture 2.0."* Design Automation Conference (DAC).

6/2024 *"The Magnificent Seven Challenges and Opportunities in Domain-Specific Accelerator Design for Autonomous Systems."* Design Automation Conference (DAC).

6/2024 *"Architecture 2.0: From Concept to Breaking Ground."* CogArch Workshop at (ISCA). **(Keynote)**.

6/2024 *"The Magnificent Seven Challenges and Opportunities in Domain-Specific Accelerator Design for Autonomous Systems."* EPOCHS Workshop at ISCA.

4/2024 *"The State of TinyML Benchmarking: Current Landscape, Challenges, and Emerging Trends."* tinyML Summit.

1/2024 *"Architecture 2.0."* Free and Open Source Silicon (FOSSI).

10/2023 *"Architecture 2.0."* Open Compute Project (OCP), Virtual.

09/2023 *"Architecture 2.0."* MIT Industry-Academia Partnership.

07/2023 *"Architecture 2.0."* Design Automation Conference (DAC), Virtual.

06/2023 *"The Parameter and Chip Wars."* Vail Computer Elements Workshop, Virtual.

06/2023 *"Adopting AI: With Power Comes Responsibility."* Panel, FDCAI, Virtual.

04/2023 *"TinyML."* IEEE International Symposium on Low-Power and High-Speed Chips (COOL Chips), Virtual.

04/2023 *"The Parameter and Chip Wars: Shifting the Focus from Model-centric to Data-centric AI."* MICRON, Virtual.

04/2023 *"NeuroBench: Advancing Neuromorphic Computing through Collaborative and Rigorous Benchmarking."* NICE, Virtual.

11/2022 *"TinyML."* Urban Sensor Networks Workshop Panel, Virtual.

10/2022 *"ML Metrics: The Past, Present, and Future of Benchmarking ML Systems, Datasets, and Use Cases."* Specialization with Benchmarks for Emerging Applications (MICRO), Virtual.

09/2022 *"Tiny Machine Learning."* Chips & Compilers Symposium, MLSys '22, Virtual.

09/2022 *"MLPerf & DataPerf."* The Autonomous Vehicle Computing Consortium (AVCC), Virtual.

09/2022 *"Benchmarking FastML Systems."* Fast ML for Science Workshop.

08/2022 *"Tiny Machine Learning: A System-level Perspective."* ACM/IEEE International Symposium on Low Power Electronics and Design, Virtual. **(Keynote)**.

08/2022 *"The Vision Behind MLPerf and DataPerf."* Monterey Data Conference, Virtual.

08/2022 *"DataPerf: Benchmarks for Data-centric AI Development."* The Future of Data-Centric AI, Snorkel.ai, Virtual.

07/2022 *"Tiny Machine Learning: Challenges and Opportunities."* Design Automation Conference, ROAD4NN Workshop, Virtual. **(Keynote)**.

07/2022 *"The Future of Smart Cities is Tiny and Bright."* ACM International Conference on Future Energy Systems (ACM e-Energy), Virtual. **(Keynote)**.

06/2022 *"Machine Learning Metrics."* HiPEAC AccML Workshop.

05/2022 *"Democratizing TinyML."* Rutgers Efficient AI (REFAI) Seminar, Virtual.

04/2022 *"Tiny Machine Learning (TinyML) for Domain-Specific Systems."* International Workshop on Domain Specific System Architecture (DOSSA-4), Virtual.

03/2022 *"IoT 2.0: The Era of Intelligence on Things."* Design Automation and Test in Europe, Virtual.

01/2022 *"Tiny Machine Learning."* Accelerated Machine Learning Workshop, co-located with HiPEAC 2022, Virtual.

12/2021 *"Machine Learning's Future is Tiny & Bright."* AICON GWANGJU, Virtual. **(Keynote)**.

12/2021 *"Democratizing TinyML."* Globecom Workshop on Sustainable Environmental Sensing Systems,

Virtual. **(Keynote)**.

11/2021 *"Tiny Machine Learning."* EdukCircle International Convention on Engineering and Computer Technology, Virtual.

11/2021 *"Tiny Machine Learning (TinyML) for Robotics."* Conference on Robot Learning, Virtual. **(Keynote)**.

11/2021 *"Democratizing TinyML: Generalization, Standardization and Automation."* Workshop on Hardware and Algorithms for Learning On-a-chip (HALO) workshop, ICCAD conference, Virtual. **(Keynote)**.

11/2021 *"Democratizing TinyML: Generalization, Standardization and Automation."* Multi-DNN Workshop, co-located with MICRO, Virtual. **(Keynote)**.

11/2021 *"Data for TinyML."* Data for AI Summit @Google (internal), Virtual. **(Keynote)**.

10/2021 *"Widening Access to Applied Machine Learning with TinyML."* IEEE Global Humanitarian Technology Conference, Virtual. **(Keynote)**.

10/2021 *"The Vision Behind MLPerf."* SiFive Engineering Forum, Virtual.

10/2021 *"The Vision Behind MLPerf."* Samsung AI Cambridge, Santa Clara.

10/2021 *"Democratizing TinyML."* MICRO 2021 Workshop on Systems for Multi-DNN Workloads, Virtual. **(Keynote)**.

09/2021 *"The Vision Behind MLPerf."* Tensorrent, Virtual.

07/2021 *"Tiny Machine Learning."* Workshop on Artificial Intelligence, Machine Learning, & Computational Intelligence, Virtual.

07/2021 *"The Vision Behind MLPerf."* STMicroelectronics, Virtual.

03/2021 *"tinyMLPerf: Benchmarking Ultra-low-power Systems."* Tiny Machine Learning Summit, San Francisco.

03/2021 *"tinyMLPerf: Benchmarking Ultra-low-power Systems."* "Machine Learning at the Edge," Workshop co-located with Design Automation Conference.

06/2020 *"The Vision Behind MLPerf."* AMD Tech Talk, Austin.

03/2020 *"tinyMLPerf: Benchmarking Ultra-low-power Systems."* Tiny Machine Learning Summit.

02/2020 *"The Vision Behind MLPerf."* International Solid-State Circuits Conference (ISSCC), San Francisco.

02/2020 *"MLPerf Inference."* Machine Learning Systems Workshop, Santa Clara.

09/2019 *"The Vision Behind MLPerf: A Broad ML Benchmark Suite for Measuring the Performance of ML Software Frameworks, ML Hardware Accelerators in Cloud and Edge Computing."* Taiwan Semiconductor Manufacturing Company (TSMC).

09/2019 *"The Vision Behind MLPerf: A Broad ML Benchmark Suite for Measuring the Performance of ML Software Frameworks, ML Hardware Accelerators in Cloud and Edge Computing."* Taiwan AI Labs. **(Keynote)**.

09/2019 *"The Vision Behind MLPerf: A Broad ML Benchmark Suite for Measuring the Performance of ML Software Frameworks, ML Hardware Accelerators in Cloud and Edge Computing."* Synopsis SNUG, Taiwan.

04/2019 *"Ten Commandments for Mobile Computer Architecture."* Workshop on Infrastructure and Methodology for SoC-level Performance and Power Modeling, co-located with ASPLOS.

03/2019 *"The Vision Behind MLPerf (mlperf.org)."* Intel VSSAD.

03/2019 *"Evaluating Resiliency in End-to-end Learning for Autonomous Machines."* The 15th Workshop on Silicon Errors in Logic – System Effects.

03/2019 *"Autonomous Aerial Computing Machines."* International Workshop on Performance Analysis of Machine Learning Systems.

12/2018   *"The Vision Behind MLPerf: A Broad ML Benchmark Suite for Measuring the Performance of ML Software Frameworks, ML Hardware Accelerators, and ML Cloud and Edge Platforms."* IEEE Big-Bench co-located with the IEEE Big Data Conference. **(Keynote)**.

12/2018   *"The Vision Behind MLPerf: A Broad ML Benchmark Suite for Measuring the Performance of ML Software Frameworks, ML Hardware Accelerators in Cloud and Edge Computing."* The Forum of Turing Centers, Shanghai Jiao Tong University. **(Keynote)**.

12/2018   *"The Vision Behind MLPerf: A Broad ML Benchmark Suite for Measuring the Performance of ML Software Frameworks, ML Hardware Accelerators in Cloud and Edge Computing."* Boston Area Computer Architecture Workshop. **(Keynote)**.

11/2018   *"The Vision Behind MLPerf: A Broad ML Benchmark Suite for Measuring the Performance of ML Software Frameworks, ML Hardware Accelerators, and ML Cloud and Edge Platforms."* Samsung Advanced Computing Lab (ACL).

10/2018   *"The Vision Behind MLPerf: A Broad ML Benchmark Suite for Measuring the Performance of ML Software Frameworks, ML Hardware Accelerators, and ML Cloud and Edge Platforms."* Samsung Austin Research Center (SARC).

10/2018   *"Mobile Robotics for Computer Architects."* First Annual Workshop on Domain Specific System Architecture co-located with International Symposium on Microarchitecture (MICRO). **(Keynote)**.

04/2018   *"Aerial Computing: Challenges and Opportunities for Hardware and Software Architects Designing Flying Systems."* IBM T. J. Watson.

03/2018   *"Architecting for Big Data Analytics: Think Dubai rather than Venice."* Workshop on BigData Benchmarks, Performance, Optimization and Emerging Hardware (co-located with ASPLOS).

02/2017   *"Architecture Support for Scripting from Mobile to Cloud."* Stanford University, Palo Alto.

05/2016   *"Watt-Wise-Web://Architecting for Responsiveness and Energy-Efficiency."* The University of Chicago, Chicago–IL.

05/2016   *"Mobile CPU Evolution: The Past, the Present, and the Future."* Rice University – TexasWISE Keynote, Houston.

05/2016   *"Microarchitectural Implications of Event-driven Programming."* Northwestern, Chicago–IL.

05/2016   *"Microarchitectural Implications of Event-driven Programming."* Intel Santa Clara–CA.

05/2016   *"Microarchitectural Implications of Event-driven Programming."* AMD Austin–TX.

03/2016   *"Programming the Web of Things: Why Architects Should Care."* Sensors to Cloud Architectures Workshop, Barcelona. **(Keynote)**.

02/2016   *"From Moore's Law to Moore's Crawl: Architecting the Next-Generation of Mobile Computing Devices."* University of Washington, Seattle–WA.

02/2016   *"From Moore's Law to Moore's Crawl: Architecting the Next-Generation of Mobile Computing Devices."* National Academy of Engineering (NAE) Annual Event, Irvine–CA.

12/2015   *"Programming the Web of Things."* Workshop on Internet of Things (IoT) held in conjunction with International Symposium on Microarchitecture, Hawaii.

12/2015   *"End of the Road for My CAREER."* Workshop on Negative Outcomes, Post-mortems, and Experiences (NOPE) held in conjunction with International Symposium on Microarchitecture, Hawaii.

11/2015   *"Watt-Wise Web: Architecting for a Responsive and Energy-Efficient Mobile Web."* Texas A&M University.

10/2015   *"Watt-Wise Web: Architecting for a Responsive and Energy-Efficient Mobile Web."* Google Faculty Summit.

10/2015   *"Watt-Wise Web: Architecting for a Responsive and Energy-Efficient Mobile Web."* Georgia Tech University.

09/2015   *"What Users Want and What Hardware Provides: Bridging the Gap Between User Quality of Experience (QoE) and Mobile Device Trends."* National Taiwan University, Taiwan.

09/2015   *"What Users Want and What Hardware Provides: Bridging the Gap Between User Quality of Experience (QoE) and Mobile Device Trends."* Mediatek, Taiwan.

09/2015   *"What Users Want and What Hardware Provides: Bridging the Gap Between User Quality of Experience (QoE) and Mobile Device Trends."* Academia Sinica, Taiwan.

09/2015   *"Mobile CPU Evolution: The Past, the Present, and the Future."* Taiwan Application Processor Union – Mobile SoC Summer Course, Taiwan.

06/2015   *"What Users Want and What Hardware Provides: Bridging the Gap Between User Quality of Experience (QoE) and Mobile Device Trends."* Duke University, Raleigh–NC.

06/2015   *"GPU Voltage Guardband Management to Achieve Exascale Energy-Efficiency."* AMD Austin–TX.

05/2015   *"Voltage Noise in Multicore Processors."* Intel, Portland.

05/2015   *"GPU Voltage Guardband Management to Achieve Exascale Energy-Efficiency."* Intel, Portland.

04/2015   *"What Users Want and What Hardware Provides: Bridging the Gap Between User Quality of Experience (QoE) and Mobile Device Trends."* Qualcomm, Raleigh–NC.

04/2015   *"Mobile CPU Evolution: The Past, the Present, and the Future."* Microsoft, Seattle–WA.

03/2015   *"What Users Want and What Hardware Provides: Bridging the Gap Between User Quality of Experience (QoE) and Mobile Device Trends."* Facebook, Menlo Park–CA.

02/2015   *"Mobile CPU Evolution: The Past, the Present, and the Future."* Intel Santa Clara–CA.

11/2014   *"Watt-Wise Web: Architecting for a Responsive and Energy-Efficient Mobile Web."* Univ. of Michigan.

06/2014   *"Simulators are Perfect, Authors are Oracles, Users are Innocent."* Workshop on Duplicating, Deconstructing and Debunking (WDDD) held in conjunction with International Symposium on Computer Architecture.

06/2014   *"Architecting for the Mobile Web: Where We've Been, Where We're Heading, and What We Need to Address."* Parallelism in Mobile Platforms (PRISM) held in conjunction with International Symposium on Computer Architecture.

05/2014   *"Mobile Processor Architectures: Design Implications and Challenges for Energy Efficiency."* Indo-American Frontiers of Engineering (IAFOE), Mysore–India.

05/2014   *"Hardware and Software Co-Design for Robust and Resilient Execution."* International Conference on Integrated Circuit Design and Technology (ICICDT), Austin.

03/2014   *"Architectural Support for the Interactive Mobile Web."* Samsung Austin–TX.

03/2014   *"Architectural Support for the Interactive Mobile Web."* ARM Austin–TX.

02/2014   *"Robust and Resilient Systems from the Bottom-Up: Circuits, Architecture and Software Integration."* ISSCC Forum, San Francisco–CA.

02/2014   *"Architectural Support for the Interactive Mobile Web."* Intel Austin–TX.

02/2013   *"Toward High-Performance and Energy-Efficient Mobile Web Browsing."* Qualcomm, Santa Clara–MA.

08/2012   *"Toward High-Performance and Energy-Efficient Mobile Web Browsing."* Intel Austin–TX.

08/2012   *"Toward High-Performance and Energy-Efficient Mobile Web Browsing."* AMD Austin–TX.

10/2010   *"Web Search Using Small Cores."* AMD, Boxborough–MA.

07/2010   *"Web Search Using Small Cores."* SeaMicro Santa Clara–CA.
07/2010   *"Web Search Using Small Cores."* Intel Hudson–MA.
07/2010   *"Web Search Using Small Cores."* IBM T. J. Watson Labs, Hawthorne–NY.
07/2010   *"Web Search Using Small Cores."* HP Labs, Palo Alto–CA.
07/2010   *"Web Search Using Small Cores."* Google, Palo Alto–CA.
07/2010   *"Web Search Using Small Cores."* Facebook, Palo Alto–CA.
07/2010   *"Software-Assisted Hardware Reliability."* Intel, Portland.
07/2010   *"Software-Assisted Hardware Reliability."* IBM T. J. Watson Labs, Yorktown–NY.
06/2010   *"Web Search Using Small Cores."* Amazon, Seattle–WA.
06/2010   *"Software-Assisted Hardware Reliability."* Microsoft Research, Redmond–WA.
03/2010   *"Software-Assisted Hardware Reliability."* Intel Santa Clara–CA.
03/2010   *"Software-Assisted Hardware Reliability."* AMD Austin–TX.
03/2007   *"Persistent Code Caching."* Intel Santa Clara–CA.

Books

2023   V. Janapa Reddi. *Machine Learning Systems.* In review with Cambridge University Press.
Website: https://mlsysbook.ai
PDF: https://mlsysbook.ai/Machine-Learning-Systems.pdf

2013   V. Janapa Reddi and Meeta Sharma Gupta. *Resilient Architecture Design for Voltage Variation*. Synthesis Lectures on Computer Architecture. Morgan & Claypool Publishers. ISBN: 9781608456376.

Technical Reports

2010   V. Janapa Reddi, B. Lee, T. Chilimbi, K. Vaid. "Web Search Using Small Cores: Quantifying the Price of Efficiency," in Microsoft Research Tech. Report, June.

Theses

2010   V. Janapa Reddi. "Software-Assisted Hardware Reliability: Enabling Aggressive Timing Speculation Using Run-Time Feedback from Hardware and Software," Ph.D. Thesis, School of Engineering and Applied Sciences, Harvard University.

2005   V. Janapa Reddi. "Deploying Dynamic Code Transformation in Modern Computing Environments," M.S. Thesis, Department of Electrical and Computer Engineering, University of Colorado.

2003   V. Janapa Reddi. "Heterogeneous Networks of Workstations Across Wide Area Networks," B.S. Thesis, Department of Electrical and Computer Engineering, Santa Clara University.

Patents

2005   R. Cohn, T. Moseley, and V. Janapa Reddi. "System and method to instrument references to shared memory." U.S. Patent Application 11/143,130, filed June 1, 2005.

2012 N. Kim, J. O'Connor, M. Schulte, and V. Janapa Reddi. "Method and apparatus for power reduction during lane divergence." U.S. Patent Application 13/605,460, filed September 6, 2012.

2015 V. Janapa Reddi, M. Gupta, G. Holloway, G. Wei, M. D. Smith, and D. Brooks. "Adaptive event-guided system and method for avoiding voltage emergencies." U.S. Patent 8,949,666, issued February 3, 2015

Teaching

HARVARD UNIVERSITY

Sp' 2024 COMPSCI 141: Computing Hardware
Fa' 2023 COMPSCI 249R: Tiny Machine Learning
Sp' 2023 COMPSCI 141: Computing Hardware
Fa' 2022 COMPSCI 249R: Tiny Machine Learning
Sp' 2021 COMPSCI 141: Computing Hardware
Fa' 2020 COMPSCI 249R: Tiny Machine Learning
Fa' 2019 COMPSCI 249R: Autonomous Machines

THE UNIVERSITY OF TEXAS AT AUSTIN

Sp' 2016 EE 319K: Introduction to Embedded Systems
Sp' 2015 EE 319K: Introduction to Embedded Systems
Fa' 2014 EE382V: Code Generation and Optimization
Sp' 2014 EE 319K: Introduction to Embedded Systems
Fa' 2013 EE382V: Code Generation and Optimization
Sp' 2013 EE 319K: Introduction to Embedded Systems
Fa' 2012 EE382V: Dynamic Compilation
Sp' 2012 EE382V: Code Generation and Optimization
Fa' 2011 EE382V: Dynamic Compilation

Students

CURRENT PhD STUDENTS

2023/- Jeffrey Ma
2023/- Oishii Banerjee
2022/- Ikechukwu Uchendu
2022/- Jason Jabbour
2022/- Jason Yik
2022/- Jessica Quaye
2021/- Emma Chen

2021/-   Mark Mazumder
2020/-   Shvetank Prakash
2019/-   Radhika Ghosal

Graduated PhD students

2019/2024   Max Lam,
PhD Thesis: *"Systems and Algorithms for Efficient, Secure and Private Machine Learning Inference,"*
First Job: Research Scientist, Apple.

2019/2024   Colby Banbury,
PhD Thesis: *"Efficient and Scalable Tiny Machine Learning,"*
First Job: Senior Research Scientist, Microsoft Research.

2019/2024   Yu-shun Hsiao,
PhD Thesis: *"Safety-Aware System Optimization for Autonomous Machines,"*
First Job: CEO, Founder, Robotics Start-up.

2018/2024   Srivatsan Krishnan,
PhD Thesis: *"Designing Efficient Domain-Specific Architectures for Autonomous Systems,"*
First Job: Senior Software Engineer, NVIDIA.

2018/2022   Brian Plancher,
PhD Thesis: *"GPU Acceleration for Real-time, Whole-body, Nonlinear Model Predictive Control,"*
First Job: Assistant Professor at Barnard College at University of Columbia.

2014/2022   Behzad Boroujerdian,
PhD Thesis: *"Agile Development of Domain-Specific Solutions for Emerging Mobile Systems,"*
First Job: Deep Learning Researcher, NVIDIA.

2014/2022   Daniel Richins,
PhD Thesis: *"Bottlenecks in Big PhD Thesis: Data Analytics and AI Applications and Opportunities for Improvement,"*
First Job: Instructor, Brigham Young University.

2013/2018   Yazhou Zu,
PhD Thesis: *"Active Timing Margin Management to Improve Microprocessor Power Efficiency,"*
First Job: Software Engineer, Google.

2011/2016   Jingwen Leng,
PhD Thesis: *"Guardband Management in Heterogeneous Architectures,"*
First Job: Assistant Professor at Shanghai Jiao Tong University (CSE).

2011/2016   Yuhao Zhu,
PhD Thesis: *"Energy-Efficient Mobile Web Computing,"*
First Job: Assistant Professor at Univ. of Rochester (CS).

Postdoctoral Associates

2020/2024   Matthew Stewart
2020/2023   Sabrina Neuman, Assistant Professor at Boston University.

M.S. students

2019/2021   Jonathan Cruz, Harvard
2015/2017   Wenzhi Cui, UT Austin
2014/2017   Matthew Halpern, UT Austin
2011/2013   Aditya Srikanth, UT Austin
2011/2013   Ankita Garg, UT Austin

Bio

Vijay Janapa Reddi is an Associate Professor at Harvard University, Vice President, and co-founder of MLCommons (mlcommons.org), a nonprofit organization dedicated to accelerating machine learning (ML) innovation for all. He oversees the MLCommons Research organization and serves on the MLCommons board of directors. He co-led the development of the MLPerf Inference benchmark for IoT, mobile, edge, and datacenter applications. Before joining Harvard, he was an Associate Professor at the University of Texas at Austin's Department of Electrical and Computer Engineering. Drawing on his expertise in runtime systems, computer architecture, and applied machine learning methods, he creates innovative solutions at the intersection of mobile computing, edge computing, and the Internet of Things. Dr. Janapa Reddi has earned numerous awards and accolades, including the Gilbreth Lecturer Honor from the National Academy of Engineering (NAE) in 2016, the IEEE TCCA Young Computer Architect Award (2016), the Intel Early Career Award (2013), and the Google Faculty Research Awards in 2012, 2013, 2015, 2017, and 2020. He has also received Best Paper awards at the 2020 Design Automation Conference (DAC), the 2005 International Symposium on Microarchitecture (MICRO), and the 2009 International Symposium on High-Performance Computer Architecture (HPCA). In addition, he has won various honors and awards, including IEEE Top Picks in Computer Architecture (2006, 2010, 2011, 2016, 2017, 2022, 2023). He is inducted into the MICRO and HPCA Halls of Fame (inducted in 2018 and 2019, respectively). He is strongly devoted to expanding access to applied machine learning for STEM, diversity, and the application of AI for social good. Dr. Janapa Reddi has developed an open source book, "Machine Learning Systems," available at https://MLSysBook.AI, which is being used across many institutions worldwide to teach machine learning systems engineering. Furthermore, to merge embedded systems and machine learning, he developed the Tiny Machine Learning (TinyML) series on edX, a massive open online course (MOOC) that thousands of students worldwide have taken and can even access and audit for

free. In addition, he oversaw the Austin Hands-on Computer Science (HaCS) program, which the Austin Independent School District used to teach CS to students in grades K-12. Dr. Janapa Reddi holds degrees in computer science from Harvard University, electrical and computer engineering from the University of Colorado at Boulder, and computer engineering from Santa Clara University. Dr. Janapa Reddi's passion is helping individuals and teams succeed while making the world a better place.

Last updated: July 7, 2025