Huaijin (George) Chen

Curriculum Vitae

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huaijinchen

Education

2013–2019 **Ph.D.**, *Electrical and Computer Engineering*, Rice University, Houston, TX, USA
TI Distinguished Graduate Fellowship, Advisor: Ashok Veeraraghavan

2009–2013 **B.S.**, *Imaging Science*, Rochester Institute of Technology (RIT), Rochester, NY, USA
Honors Program and Magna Cum Laude

2012 **Visiting Student**, *St. Catherine's College*, University of Oxford, Oxford, UK
Courses in Computer Science and Music

Academic Positions

since 2024 **Assistant Professor**, *University of Hawai'i at Mānoa*, Honolulu, HI
Department of Information and Computer Science
Director, Computational Imaging and Robotic Perception Lab

2016 **Visiting Researcher**, *Northwestern University*, Evanston, IL
EECS Department, Host: Oliver Cossairt
Compressive time-of-flight imaging [J2] and holography [J1]

2015 **Visiting Researcher**, *Cornell University*, Ithaca, NY
ECE Department, Host: Alyosha Molnar
Optical computing of convolutional neural network [C2]

fall 2012 **Visiting Undergraduate Researcher**, *Brown University*, Providence, RI
CS Department, Host: James Hays, Image geo-localization

Industry Positions

2022–2024 **Founding Computational Imaging Lead**, *Vayu Robotics*, Palo Alto, CA
Led the development and shipment of Vayu Sense, a plenoptic polarization 3D camera.
Vayu is advised by Nobel laureate Geoffrey Hinton and backed by Khosla Ventures

2019–2022 **Senior Research Scientist and Manager**, *SenseBrain Technology*, San Jose, CA
Smartphone computational photography: under-display camera [C6, C10], organic sensor, time-of-flight 3D imaging [J4], neural image compression [J6]

spring 2018 **Applied Machine Learning Intern**, *Light Labs*, Palo Alto, CA
Geometry-aware GANs for high-quality stereo depth on the Light L16 plenoptic camera, Mentor: Feng Li

summer 2017 **Research Intern**, *NVIDIA Research*, Santa Clara, CA
Deblurring Videos via Self-Supervised Learning [C3], Mentor: Jinwei Gu, Orazio Gallo, Ming-Yu Liu

summer 2016 **Research Intern**, *IBM Research*, Austin, TX
Multi-purpose Elderly Assistant Robot, Mentor: Chirs Durham
Press: NPR, BBC, PRI, Inc., Austin American-Statesman

2015-2016 **Co-founder and CEO**, *SenseWatch*, Houston, TX
Human-computer interaction on wearable devices via gesture recognition and vital sign interpretation

Honors and Awards

Awarded to my students

2025 **Best Paper Award (3rd Place)**, *$250*, Garcia et. al., *PolarTact3D: Single-shot Tactile 3-D Shape and Color Sensing with Polarization Imaging*, Robotics: Science and Systems (RSS) 2025 Workshop on Navigating Contact Dynamics in Robotics

2025 **Grand Prize - Excellence in Productivity (Air)**, *$10,000*, Farm Robotics Challenge 2025

Awarded to me

2019 **Outstanding Reviewer Award**, International Conference on Computer Vision (ICCV)

2019 **Best Poster Award**, Wu et. al, *PhaseCam3D — Learning Phase Masks for Passive Single View Depth Estimation*, International Conference on Computational Photography (ICCP)

2013-2018 **Texas Instruments (TI) Graduate Fellowship**, Rice University

2011-2013 **Honors Program Scholarship**, RIT

2011-2013 **Nathaniel Rochester Scholarship**, RIT

2011 **Honors Summer Research Award**, RIT

2011 **Isaac Gordon Scholarship**, RIT

2010 **John Whitman II Memorial Scholarship**, RIT

Publications

Conference and Workshop

[C15] A. Kalra, T. Salzmann, G. Stoppi, D. Marin, R. Agarwal, V. Taamazyan, M. Bokeloh, S. Hinterstoisser, A. Boykov, A. Dall'Olio, P. Dangol, K. Venkataraman, and H. Chen. "3D-Object Perception Transformer (3PT)". In: *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. Under review. 2026.

[C14] M. Mots'oehli, X. Gao, Y. Qian, T. Babeli, I. V. Tlali, A. Sijan, K. Baek, Z. Tu, and H. Chen. "AfricaDrive: A Large-Scale Autonomous Driving Dataset in Africa". In: *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. Under review. 2026.

[C13] K. Garcia, M. Yoshioka, T. Ray, T. Wang, F. Zhu, and H. Chen. "PolarTact3D: Single-shot Tactile 3-D Shape and Color Sensing with Polarization Imaging". In: *Workshop on Navigating Contact Dynamics in Robotics*. Robotics: Science and Systems (RSS). Best Paper Award (3rd Place). Los Angeles, CA, 2025.

[C12] M. Mots'oehli, F. Chen, H. W. Chan, I. V. Tlali, T. Babeli, K. Baek, and H. Chen. "Simulating Refractive Distortions and Weather-Induced Artifacts for Resource-Constrained Autonomous Perception". In: *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) Workshops*. 2025.

[C11] Y. Qian, A. Kargarandehkordi, Y. Sun, P. Azizian, O. C. Mutlu, S. Surabhi, Z. Jabbar, D. Wall, P. Washington, and H. Chen. "Hashtag2Action: Data Engineering and Self-Supervised Pre-Training for Action Recognition in Short-Form Videos". In: *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) Workshops*. 2025.

[C10] R. Feng, C. Li, H. Chen, S. Li, J. Gu, and C. C. Loy. "Generating Aligned Pseudo-Supervision from Non-Aligned Data for Image Restoration in Under-Display Camera". In: *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. 2023, pp. 5013–5022.

[C9] Y. Lu, Q. Wang, S. Ma, T. Geng, Y. V. Chen, H. Chen, and D. Liu. "Transflow: Transformer as flow learner". In: *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. Highlight. 2023, pp. 18063–18073.

[C8] L. Hu, H. Chen, and J. P. Allebach. "Joint Multi-Scale Tone Mapping and Denoising for HDR Image Enhancement". In: *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*. 2022, pp. 729–738.

[C7] A. Ignatov, R. Timofte, J. Zhang, F. Zhang, G. Yu, Z. Ma, H. Wang, M. Kwon, H. Qian, W. Tong, et al. "Realistic bokeh effect rendering on mobile gpus, mobile ai & aim 2022 challenge: report". In: *European Conference on Computer Vision (ECCV) Workshop*. Springer. 2022, pp. 153–173.

[C6] R. Feng, C. Li, H. Chen, S. Li, C. C. Loy, and J. Gu. "Removing diffraction image artifacts in under-display camera via dynamic skip connection network". In: *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. 2021, pp. 662–671.

[C5] Y. Zhou, M. Kwan, K. Tolentino, N. Emerton, S. Lim, T. Large, L. Fu, Z. Pan, B. Li, Q. Yang, et al. "UDC 2020 challenge on image restoration of under-display camera: Methods and results". In: *European Conference on Computer Vision (ECCV) Workshop*. Springer, Cham. 2020, pp. 337–351.

[C4] Y. Wu, V. Boominathan, H. Chen, A. Sankaranarayanan, and A. Veeraraghavan. "PhaseCam3D—Learning Phase Masks for Passive Single View Depth Estimation". In: *IEEE International Conference on Computational Photography (ICCP)*. Best Poster Award. IEEE. 2019, pp. 1–12.

[C3] H. Chen, J. Gu, O. Gallo, M.-Y. Liu, A. Veeraraghavan, and J. Kautz. "Reblur2Deblur: Deblurring Videos via Self-Supervised Learning". In: *International Conference on Computational Photography (ICCP)*. IEEE. 2018, pp. 1–9.

[C2] H. Chen, S. Jayasuriya, J. Yang, J. Stephen, S. Sivaramakrishnan, A. Veeraraghavan, and A. Molnar. "ASP Vision: Optically Computing the First Layer of Convolutional Neural Networks using Angle Sensitive Pixels". In: *Computer Vision and Pattern Recognition (CVPR)*. Oral. 2016, pp. 903–912.

[C1] H. Chen, M. S. Asif, A. C. Sankaranarayanan, and A. Veeraraghavan. "FPA-CS: Focal Plane Array-based Compressive Imaging in Short-wave Infrared". In: *Computer Vision and Pattern Recognition (CVPR)*. 2015, pp. 2358–2366.

Journal

[J7] Y. Qian, A. Kargarandehkordi, A. Jaiswal, S. Surabhi, K. Dunlap, K. Tarrit, P. Y. Washington, D. P. Wall, and H. Chen. "Vision Foundation Models and Zero-Shot Vision-Language Agents for Autism Screening from Short Home-Recorded Behavioral Videos". In: *npj Digital Medicine* (2026). Under review.

[J6] S. Duan, H. Chen, and J. Gu. "JPD-SE: High-Level Semantics for Joint Perception-Distortion Enhancement in Image Compression". In: *IEEE Transactions on Image Processing* 31 (2022), pp. 4405–4416. DOI: https://doi.org/10.1109/TIP.2022.3180208.

[J5] J. D. Rego, H. Chen, S. Li, J. Gu, and S. Jayasuriya. "Deep camera obscura: an image restoration pipeline for pinhole photography". In: *Optics Express* 30.15 (2022), pp. 27214–27235.

[J4] F. Gutierrez-Barragan, H. Chen, M. Gupta, A. Velten, and J. Gu. "iToF2dToF: A robust and flexible representation for data-driven time-of-flight imaging". In: *IEEE Transactions on Computational Imaging* 7 (2021), pp. 1205–1214.

[J3] H. Chen, W. Liu, R. Goel, R. C. Lua, S. Mittal, Y. Huang, A. Veeraraghavan, and A. B. Patel. "Fast retinomorphic event-driven representations for video gameplay and action recognition". In: *IEEE Transactions on Computational Imaging* 6 (2019), pp. 276–290.

[J2] H. Chen, F. Li, A. Pediredla, C. Yeh, K. He, A. Veeraraghavan, and O. Cossairt. "CS-ToF: High-resolution compressive time-of-flight imaging". In: *Optics express* 25.25 (2017), pp. 31096–31110.

[J1] Z. Wang, L. Spinoulas, K. He, L. Tian, O. Cossairt, A. K. Katsaggelos, and H. Chen. "Compressive holographic video". In: *Optics express* 25.1 (2017), pp. 250–262.

Patent

[P4] Y. Wu, V. Boominathan, H. Chen, A. C. Sankaranarayanan, and A. Veeraraghavan. *Passive and single-viewpoint 3D imaging system*. US Patent 12,073,578. Aug. 2024.

[P3] Y. Wu, V. Boominathan, H. Chen, A. C. Sankaranarayanan, and A. Veeraraghavan. *Passive and single-viewpoint 3D imaging system*. US Patent 11,676,294. June 2023.

[P2] F. Gutierrez-barragan, H. Chen, and J. Gu. *Method, apparatus, and device for camera calibration, and storage medium*. US Patent App. 17/706,946. July 2022.

[P1] J. Gu, O. Gallo, M.-Y. Liu, J. Kautz, and H. Chen. *Unsupervised learning approach for video deblurring*. US Patent 10,593,020. Mar. 2020.

Teaching

University of Hawai'i at Mānoa

spring 2025 **Instructor**, ICS 691, Topics in Computer Science (Computational Photography)

fall 2024-2025 **Instructor**, ICS 483, Computer Vision

Rice University

fall 2017 **Lead TA**, ELEC/CS 576 Introduction to Deep Learning

spring 2017 **TA**, ELEC 345/546 Introduction to Computer Vision

spring 2016 **Guest Lecturer**, ELEC 681 Fundamentals of Machine Learning

fall 2015 **TA**, BIOE 451/452, ELEC 494 Senior Design, Rice University

spring 2016 **TA**, BIOE 451/452, ELEC 494 Senior Design, Rice University

spring 2014 **Grader**, ELEC 241 Fundamentals of Electrical Engineering I

Mentoring

Current Students

Ph.D. Christian Moore, ICS, University of Hawai'i at Mānoa, 2025-

Feimei Chen, ICS, University of Hawai'i at Mānoa, 2025-

Man Luo, ICS, University of Hawai'i at Mānoa, 2025-

Moseli Motsoehli, ICS, University of Hawai'i at Mānoa, 2025-, Co-advised with Kyungim Baek,

Yang Qian, ICS, University of Hawai'i at Mānoa, 2024-

Agastya Kalra, ICS, University of Hawai'i at Mānoa and Google, 2024-

Masters Ethan Chung, ICS, University of Hawai'i at Mānoa, 2025-

Undergrad Vincent Chan, ICS, University of Hawai'i at Mānoa, 2025-

Past Students

Masters Hok Wai Chan, ICS, University of Hawai'i at Mānoa, 2024-2025

Azibun Nuder, ICS, University of Hawai'i at Mānoa, 2024-2025

Undergrad Kai Garcia, ICS, University of Hawai'i at Mānoa, 2024-2025

Mairi Yoshioka, ICS, University of Hawai'i at Mānoa, 2025

Bibiana Garcia, ICS, University of Hawai'i at Mānoa, 2025

Michaelyn Tolmie, ICS, University of Hawai'i at Mānoa, 2025

FRC 2025 Farm Robotics Challenge 2025 Grand Prize Winner Team: Rona Duldulao (ME), Lucas Horsman (ICS), Wilson Huynh (ICS), Erik Bendickson (ME), Christian Komo (ICS), Zadon Padello (ICS), Mikhail Shkaralevich (ICS), and Tyler Mak (ICS)

Thesis Committee

Ph.D. Kasiah Ruddell, Anthropology, University of Hawai'i at Mānoa, 2026

Arianna Bunnell, ICS, University of Hawai'i at Mānoa, 2026

Yannik Glaser, ICS, University of Hawai'i at Mānoa, 2025

Justin Fletcher, ICS, University of Hawai'i at Mānoa, 2025

Moseli Motsoehli, ICS, University of Hawai'i at Mānoa, 2025

Steven Wilhelm, Ocean and Resources Engineering (ORE), University of Hawai'i at Mānoa, 2025

M.S. Jan Mark Schittenhelm, Water Resources Research Center, University of Hawai'i at Mānoa, 2026

Md Rahat Shahriar Zawad, ICS, University of Hawai'i at Mānoa, 2025

John Howell, Oceanography, University of Hawai'i at Mānoa, 2025

Students Mentored at Rice University

Masters Jiuyang Dong, M.S. EE, Tsinghua University, 2019

Undergrad Weiqi Chen, B.S ECE, Rice University, 2019

Yuxin Chen, B.S. ECE, Rice University 2019

Yuzhong Huang, B.S. ECE, Franklin W. Olin College of Engineering, 2018

Jiyue Yang, B.S. ECE, Cornell University, 2016

Judy Stephen, B.S. ECE, Cornell University, 2016

Interns Supervised

Vayu Sudhansh Yelishetty, M.S., CS, CMU, 2023

Parth Patwa, M.S., ECE, UCLA, 2022

SenseBrain Brian Lee, B.S. Math/CS, MIT, 2022

Alexis Baudron, M.S. EECS, Northwestern University, 2021

Litao Hu, Ph.D., ECE, Purdue University, 2021

Felipe Gutierrez Barragan, Ph.D. ECE, University of Wisconsin, 2020-2021

Shiyu Duan, Ph.D. EE, University of Florida, 2020

Public Talks and Presentations

2025 **Invited Talk**, *"Vision-centric Robotic Perception for Real-world Productivity"*, Department of Mathematics, University of Hawai'i at Mānoa, Honolulu, HI, Dec 2025

2025 **Invited Talk**, *"Vision-centric Robotic Perception for Real-world Productivity"*, Mechanical Engineering Department Distinguished Seminar, Colorado School of Mines Colorado, Colorado, CO, Jun 2025

2025 **Oral Presentation**, *"PolarTact3D: Single-shot Tactile 3D Shape and Color Sensing with Polarization Imaging"*, Robotics: Science and System (RSS) 2025 Workshop on Navigating Contact Dynamics, Los Angeles, CA, Jun 2025

2025 **Invited Talk**, *"3D Computer Vision and Robotic Perception"*, 40th Annual Pacific Rim International Conference on Disability , Honolulu, HI, Apr 2025

2025 **Invited Talk**, *"Workshop: Building AI-Powered Computational Cameras for 3D Imaging"*, Hawai'i Data Science Institute, University of Hawai'i at Mānoa, Honolulu, HI, Mar 2025

2024 **Invited Talk**, *"Building Computational Cameras in and for the AI Era"*, ICS Seminar, University of Hawai'i at Mānoa, Honolulu, HI, Nov 2024

2024 **Invited Talk**, *"Building Computational Cameras in and for the AI Era"*, ECE Seminar, University of Utah, Salt Lake City, UT, Nov 2024

2023 **Invited Talk**, *"Computer Vision 2.0: Super-Human Machine Perception with AI-Powered Computational Imaging"*, Department of Information and Computer Science, University of Hawai'i at Mānoa, Honolulu, HI, Mar 2023

2018 **Invited Talk**, *"Leveraging Physics-based Models in Data-driven Computational Imaging"*, Caltech Optical Imaging Laboratory, California Institute of Technology, Pasadena, CA, Aug 2018

2016 **Invited Talk**, *"Efficient Machine Vision using Computational Cameras"*, College of Computer Science and Software Engineering, Shenzhen University, China, Oct 2016

2016 **Invited Talk**, *"Efficient Machine Vision using Computational Cameras"*, Computational Photography Lab, Northwestern University, Mar 2016

2015 **Invited Talk**, *"FPA-CS:Focal Plane Array-based Compressive Imaging in Short-wave Infrared"*, Mixed Signal Integrated Circuit Lab, Cornell University, Oct 2015

2014 **Invited Talk**, *"Focal Plane Array Compressive Sensing Camera"*, Visual Computing Research Center, Chinese Academy of Science - Shenzhen Advanced Institute of Technology, June 2014

2011 **Research Presentation**, *"Programmable, Adaptive Aperture Imaging with an LCD Modulator",* Undergraduate Research Symposium, Rochester Institute of Technology, NY, August 2011

Services

University of Hawai'i at Mānoa

since 2024 **Graduate Committee Member**, *Department of Information and Computer Science*

Conferences

2025 **Local Chair**, *International Conference on Computer Vision* (ICCV 2025)

2020 **Program Committee**, *International Joint Conference on Artificial Intelligence* (IJCAI 2020)

2020 **Program Committee**, *International Conference on Computational Photography* (ICCP 2020)

2019 **Program Committee**, *Association for the Advancement of Artificial Intelligence Conference* (AAAI 2019)

Workshops and Tutorials

2025 **Program Committee**, ICCV 2025 Joint Workshop on Marine Vision - 6th Workshop on Computer Vision for Analysis of Underwater Imagery (CVAUI), and 3rd Workshop on Automated Analysis of Marine Visual Data for Environmental Monitoring (AAMVEM)

2025 **Co-organizer**, CVPR 2025 Workshop on Perception for Industrial Robotics Automation (PIRA)

2024 **Invited Participant**, NSF Innovation, Culture, and Creativity (ICC) workshop

2023 **Co-organizer and instructor**, CVPR 2023 Tutorial on Polarization-Based Computer Vision

2023 **Co-organizer and instructor**, SIGGRAPH 2023 Course on Polarization-Based Visual Computing

Reviewer

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
Transactions on Computational Imaging (TCI)
Transactions on Image Processing (TIP)
Transactions on Visualization and Computer Graphics (TVCG)
International Conference on Computer Vision (ICCV)
International Conference on Computer Vision and Pattern Recognition (CVPR)
International Conference on Computational Photography (ICCP)
International Conference on Advanced Video and Signal-based Surveillance (AVSS)

Optica Optica Journal
Optics Letters (OL)
Applied Optics (AO)
Optics Express (OE)

Others European Conference on Computer Vision (ECCV)
International Conference on Learning Representations (ICLR)
Asian Conference on Computer Vision (ACCV)
Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP)

Grant and Prize

Research Grant - Total $452,932

2026 *3D Vision for Robotics*, Google Research Gift 2026, $50,000, 03/2026, PI

2026 *AinaFarm: Building the Foundation for Scalable Agricultural Physical AI, NVIDIA Academic Grant Program*, RTX Pro 6000 Blackwell GPUs and Orin Compact Supercomputers (cash equivalent ≈$28,000), 03/2026, PI

2025 *EPSCoR Research Fellows: Physics-Informed Machine Learning for Accelerated Discovery and Dynamics Analysis in Ultrafast X-Ray Diffraction*, National Science Foundation, $299,989, 01/2026–12/2027, PI; Award No. 2531897

2025 *AIVO Travel Grant*, NSF AI Institutes Virtual Organization (AIVO), $2,500, 09/2025

2025 *Digital Biomarkers for Early Detection of Alzheimer's Disease Using Computer Vision and AI*, Hawaii Community Foundation, $59,152, 08/2025 - 02/2027, PI

2025 *AIVO Travel Grant*, NSF AI Institutes Virtual Organization (AIVO), $2,000, 07/2025

2025 *Farming Robot for Research and Education*, UH Multi-departmental Seed Grant, $9,500 (ICS $5,000, Natural Science $2,500, Agriculture $1,000, Engineering $1,000), 02/2025, PI

2011 *A Dual-side Viewable LCD Sys- tem for Portable Devices*, Kodak-RIT CIS Innovative Micro-grant, $1,791, 03/2011, PI

Research Prize - Total $10,250

2025 *Best Paper Award (3rd Place)*, Robotics: Science and Systems (RSS) 2025 Workshop on Navigating Contact Dynamics in Robotics, $250, 06/2025, PI

2025 *Farm Robotics Challenge 2025 Grand Prize - Excellence in Productivity (Air)*, NSF/USDA NIFA AI Institute for Next Generation Food Systems (AIFS), $10,000, 05/2025, PI

Artwork

2015 Huaijin Chen, Hope Cowan and Emma Wine, "Colorspace", Live harp and computer music and lighting performance, *15th LaTex Electronic Music Festival*, Houston, TX, Nov 20-21, 2015 [Video]