

Huaijin (George) Chen

Curriculum Vitae

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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

- 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

Publications

Journal

- [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.

Conference

- [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*. 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*. 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*. 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*. 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*. 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*. Springer, Cham. 2020, pp. 337–351.
 - [C4] Y. Wu, V. Boominathan, H. Chen, A. Sankaranarayanan, and A. Veeraraghavan. "Phase-Cam3D—Learning Phase Masks for Passive Single View Depth Estimation". In: *2019 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)*, 2018. 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)*, 2016. 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. 2015, pp. 2358–2366.
- [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 **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. Yang Qian, ICS, University of Hawai'i at Mānoa, 2024-
Agastya Kalra, ICS, University of Hawai'i at Mānoa and Google, 2024-

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

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

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

Talks and Presentations

- 2024 **Invited Talk**, 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**, *"Computational Imaging in Computer Vision Applications"*, Research Institute, Sunny Optical Technology (Group) Co., Ltd., Ningbo, China, Oct 2016
- 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**, textit“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

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 **Co-organizer**, CVPR 2025 Workshop on Perception for Industrial Robotics Automation (PIRA)
- 2023 **Co-instructor**, CVPR 2023 Tutorial on Polarization-Based Computer Vision
- 2023 **Co-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)

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
[\[Video\]](#)