JASPER TAN

Computational Imaging Research Engineer
Glass Imaging

jasper@glass-imaging.com
https://tanjasper.github.io

RESEARCH INTERESTS

Computational imaging, computer vision, deep learning, privacy-preserving machine learning

EDUCATION

PhD in **Electrical and Computer Engineering**

Rice University, December 2022

Advisors: Prof. Richard Baraniuk and Prof. Ashok Veeraraghavan

Thesis: "Privacy-Preserving Machine Learning: The Role of Overparameterization and Solutions in Computational Imaging"

MS in **Electrical and Computer Engineering**

Rice University, August 2018

Advisors: Prof. Richard Baraniuk and Prof. Ashok Veeraraghavan

Thesis: "Face detection and verification with FlatCam lensless imaging system"

BS in **Electrical Engineering** and **Computer Science & Engineering**, *summa cum laude*

Santa Clara University, June 2015

GPA: 3.99/4.00

INDUSTRY POSITIONS

Computational Imaging Research Engineer

Glass Imaging, Los Altos, California, 2023—Present

- Image enhancement using machine learning and computational imaging

PhD Machine Learning Software Engineering Intern

Facebook Music Video Ranking, Meta, Seattle, Washington, 2022

- Developed a machine learning-based music video recommendation system for the Facebook app

Computational Imaging Intern

Imaging Systems Group, Light Labs Inc., Redwood City, California, 2019

- Drove a research project on image super-resolution
- Developed an intuitive graphical user interface for compactly serializing multi-camera system parameters

Technical Intern

Corporate Application Engineers, Synopsys Inc., Sunnyvale, California, 2013

- Tested and identified errors in place-and-route software tool

SELECTED HONORS AND RESEARCH AWARDS

Rice University:

Data to Knowledge Lab Graduate Fellow, 2020
Ken Kennedy Engineering Enhancement Fellowship, 2015–2019
Texas Instruments Graduate Fellowship, 2015–2016

Santa Clara University:

Student Life Award, 2015
School of Engineering Award for Research Excellence, 2015
Academic Achievement Award in Electrical Engineering, 2015
Outstanding Computer Engineering Senior Award, 2015
School of Engineering Senior Design Presentation Award, 2015
Upsilon Pi Epsilon, 2015
Alpha Sigma Nu, 2015
Carl H. Hayn Physics Prize, 2013
Tau Beta Pi, 2013

Others:

Merit Scholar, Ateneo de Manila University, 2011
Xavier Award, Xavier High School, 2007

TEACHING EXPERIENCE

Graduate teaching assistant

ELEC 599: First Year Grad Students Projects
Rice University
Spring 2020

Graduate fellow
DSCI 435: Applied Machine Learning and Data Science Projects
Rice University
Spring 2020

PROFESSIONAL ACTIVITIES

Academic Service
Co-organizer, CVPR UG2+ Challenge Workshop, 2020
Reviewed for:

IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
International Conference on Computer Vision (ICCV)
Indian Conference on Computer Vision, Graphics, and Image Processing (ICVGIP)
Advances in Modeling and Learning Interactions (NeurIPS Workshop)
Neural Information Processing Systems (NeurIPS)

University Service
President, Rice Electrical & Computer Engr. Graduate Student Association, 2020—2021
Graduate Student Chair, Rice Engr. Research Experience for Undergraduates (REU), 2021
Social Chair, Rice Electrical and Computer Engr. Graduate Student Association, 2019—2020
Secretary, Rice Electrical and Computer Engr. Graduate Student Association, 2016—2017
Sophomore representative, Santa Clara University IEEE, 2012—2013

JOURNAL PUBLICATIONS

J. Tan, V. Boominathan, R. G. Baraniuk, and A. Veeraraghavan, “EDoF-ToF: extended depth of field time-of-flight imaging,” in *Opt. Express*, vol. 29, no. 23, pp.38540-38556, Nov 2021.

J. Tan, L. Niu, J. Adams, V. Boominathan, J. T. Robinson, R. G. Baraniuk, and A. Veeraraghavan, "Face detection and verification using lensless cameras," in *IEEE Trans. Comput. Imag.*, vol. 5, no. 2, pp. 180-194, June 2019.

P. Wilhite, A. A. Vyas, J. Tan, **J. Tan**, T. Yamada, P. Wang, J. Park, and C. Y. Yang, “Metal-nanocarbon contacts”, in *Semicond. Sci. Technol.,* vol. 29, no. 5, p. 054006, 2014.

CONFERENCE PAPERS

J. Tan, D. LeJeune, B. Mason, H. Javadi, R.G. Baraniuk, “A Blessing of Dimensionality in Membership Inference through Regularization,” in *Int. Conf. Artif. Intell. Statist. (AISTATS)*, April 2023

J. Tan, B. Mason, H. Javadi, R.G. Baraniuk, "Parameters or privacy: a provable tradeoff between overparameterization and membership inference," in *Neural Information Processing Systems (NeurIPS)*, Nov. 2022

V. Saragadam, **J. Tan**, G. Balakrishnan, R.G. Baraniuk, A. Veeraraghavan, "MINER: multiscale implicit neural representations," in *European Conf. Comput. Vision (ECCV)*, Oct. 2022

S. Alemohammad, H. Babaei, R. Balestriero, M. Y. Chung, A. I. Humayun, D. LeJeune, N. Liu, L. Luzi, **J. Tan**, Z. Wang, R. Baraniuk, "Wearing a MASK: compressed representations of variable-length sequences using recurrent neural tangent kernels," in *IEEE Conf. Acoust. Speech, Signal Process. (ICASSP), Jun. 2021.*

J. Tan, S. Khan, V. Boominathan, J. Byrne, R. Baraniuk, K. Mitra, and A. Veeraraghavan, "CAnOPIC: pre-digital privacy-enhancing encodings for computer vision," in *IEEE Int. Conf. Multimedia & Expo (ICME)*, Jul. 2020

S. Khan, A. V. R, V. Boominathan, **J. Tan**, A. Veeraraghavan, and K. Mitra, "Towards photorealistic reconstruction of highly multiplexed lensless images," in *IEEE Int. Conf. Comput. Vision (ICCV),* Oct. 2019

J. Tan and C. S. Burrus, "Near-linear-phase IIR filters using Gauss-Newton optimization," in *IEEE Int. Midwest Symp. Circuits Syst.,* Aug. 2019

J. Tan, V. Boominathan, A. Veeraraghavan, and R. G. Baraniuk, "Flat focus: depth of field analysis for the FlatCam lensless imaging system," in *IEEE Conf. Acoust. Speech, Signal Process. (ICASSP),* Mar. 2017, pp. 6473—6477

J. Tan and S. G. M. Koo, "A survey of technologies in internet of things," in *IEEE Int. Conf. Distrib. Comput. Sensor Syst.,* May 2014, pp.269—274

PREPRINTS

V. Saragadam, D. LeJeune, **J. Tan**, G. Balakrishnan, A. Veeraraghavan, R. G. Baraniuk, "WIRE: wavelet implicit neural representations," arXiv:2301.05187, Jan 2023

PRESENTATIONS

"CAnOPIC: pre-digital privacy-enhancing encodings for computer vision," *IEEE International Conference on Multimedia & Expo*, Virtual, July 2020.

"FlatCam: Thin Lensless Cameras Through Signal Processing," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, New Orleans, Louisiana, March 2017.

"A Survey of Technologies in Internet of Things," *IEEE International Conference on Distributed Computing in Sensor Systems*, Marina Del Ray, California, May 2014.

SKILLS AND QUALIFICATIONS

- Programming languages (from most experience to least): Python, Matlab, SQL, C++, C
- Deep learning frameworks: Pytorch, MatConvNet
- Experience and knowledge in computer vision, machine learning, deep learning, computational imaging, solving inverse problems