Arjun Teh

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Summary

PhD candidate specializing in differentiable rendering for 3D reconstruction and design optimization. Proven track record developing and publishing novel algorithms with order-of-magnitude efficiency improvements.

Education

2018 - 2025 PhD (Computer Science) at **Carnegie Mellon University**
2013 - 2017 B.S. (Computer Engineering) at **University of Texas at Austin**

Research and Experience

Carnegie Mellon University - PhD September 2018 - August 2025

- Design MCMC algorithms for joint discrete-continuous parameter optimization in optics design
- Develop novel differentiable rendering techniques for transparent object reconstruction and design, achieving order-of-magnitude memory efficiency improvements over existing methods
- Use generative methods via stochastic differential equations to develop efficient sampling methods

Mitsubishi Electric Research Laboratories - Intern May 2024 - September 2024

- Developed NeRF-based inverse rendering algorithm to reconstruct indoor AC airflow patterns
- Enforced fluid dynamics in airflow reconstructions through physically informed neural networks

Epic Games - Research Intern May 2020 - September 2020

- Researched methods for automatically generating LOD assets from high-resolution artist assets
- Built data pipeline between Unreal Engine and PyTorch to enable asset processing

Magic Leap - Runtime OS Software Engineer (C++) June 2017 - July 2018

- Designed IPC infrastructure for client applications to request device resources
- Built 3D window manager for the onboard system

Teaching Assistant

Technical Animation Spring 2021

- Advised students on modern simulation techniques in computer graphics (fluid, hair, IK)
- Assisted in debugging of implementations of physical simulations of snow, smoke, cloth, etc.

Simultaneous Localization and Mapping Spring 2022
Computer Architecture Fall 2016

Publications

Teh, Arjun, et al. "Automated design of compound lenses (Under submission)". 2025.

Teh, Arjun, et al. "Indoor Airflow Imaging Using Physics-Informed Schlieren Tomography". *IEEE International Conference on Acoustics, Speech, and Signal Processing*, IEEE, 2025.

Teh, Arjun, et al. "Aperture-Aware Lens Design". *ACM SIGGRAPH 2024 Conference Papers*, SIGGRAPH '24, Association for Computing Machinery, 2024.

Teh, Arjun, et al. "Adjoint Nonlinear Ray Tracing". *ACM Transactions on Graphics*, vol. 41, no. 4, July 2022.

Skills

Theory	Differentiable Rendering, Machine Learning, Optimization, Statistics, MCMC
Programming	C++, Python, Matlab, PyTorch, JAX
	Familiar with OpenGL, OpenCV, CUDA
Tools	Git, Unix and Blender