Tianshuang (Ethan) Qiu

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Education

University of California, Berkeley *Aug. 2024 - May 2025*
Master of Science, Electrical Engineering and Computer Science

University of California, Berkeley *Aug. 2020 - May 2024*
Bachelor of Arts, Computer Science *GPA: **4.0**/4.0*

- **Relavent Courses**: Operating Systems, Machine Learning, Deep Neural Networks, Computer Security, Robotics, Real Analysis, Structure and Interpretation of Computer Programs, Data Structures, Designing Information Devices and Systems I& II, Discrete Mathematics, Artificial Intelligence, Machine Structures, Multivariable Calculus

Industry Experience

Robotics Systems Intern *May 2024 - August 2024*
Robert Bosch LLC *Sunnyvale, CA*

- Developed a pipeline to integrate VLMs to understand the scene and its components using Gaussian Splats
- Designed new Gaussian-Splat based system to rapidly construct a scene understanding model
- Integrated state-of-the-art models (SAM2, detectron) into the pipeline to enable rapid object updating (< 2s)
- Filed Invention Report for the Gaussian-Splat system in preparation of a patent, which is currently under review

Machine Learning Engineer Intern *May 2023 - Aug. 2023*
Apple Inc. *Cupertino, CA*

- Analyzed battery data from over 1500 devices to help Cell Engineers for design improvement
- Migrated previous pipeline from MATLAB to Python, modularized the code to facilitate further developments
- Developed an internal graphical tool to apply ML algorithms and create data visualizations automatically which was adopted by the team; streamlined process to visualize new features, saved labor cost by over 50%
- Designed neural net model to process raw time series data from users over 2 years and analyzed results with the internal tool above. The model has been recommended for further investigation by relevant teams

Academia Experience

Berkeley Artificial Intelligence Research *Dec. 2021 - Present*
AUTOLAB *Prof.* Ken Goldberg

In-Hand NeRF Reconstruction

- Designed models to predict the success of additive manufacturing (3D printing) based on the part orientation
- Explored a variety of deep neural net architectures and data representations; worked with cloud-based clusters to accelerate data processing and training; achieved an accuracy of over 90% in classification
- Compared our novel approach using point clouds against SotA 3D CNN models that use voxels

Blox-net

- Designed with team a system that can take text input and construct 3D models of the objects described
- Developed a system of multi-stage prompting and simulation feedback for VLMs to reduce hallucination
- Integrated the system with the UR5e robot to manipulate real blocks to realize the 3D designs of the VLM

Breathless: Catie and the Robot

- Collaborated with Robotics and Dance PhD Catie Cuan, and used CV models extract her motions from videos
- Programmed graphical tool by applying signal processing techniques (gaussian and fourier filters)
- The project premiered for an 8 hour performance in **National Sawdust** in December 2023 and interviwed with **Forbes** reporter Benjamin Wolff

Publications

- **Blox-net:** Andrew Goldberg, Kavish Kondap, **Tianshuang Qiu**, Zehan Ma, Letian Fu Justin Kerr, Huang Huang, Kaiyuan Chen, Kuan Fang, Ken Goldberg. *Submitted to ICRA 2025*
- **Shape representation and deep learning architecture for additive manufacturing predictions**: Sara Shonkwiler, **Tianshuang Qiu**, Chang Li, Chen Dai, Sara McMains. *Submitted to NAMRC 2025*
- **Breathless: An 8-hour Performance Contrasting Human and Robot Expressiveness:** Catie Cuan, **Tianshuang Qiu**, Shreya Ganti, Ken Goldberg. *Accepted to ISRR 2024*
- **Bin-Optimized Motion Planning:** Zachary Tam, Karthik Dharmarajan, **Tianshuang Qiu**, Yahav Avigal, Jeffrey Ichnowski, Ken Goldberg. *Accepted to IROS 2024*

Technical Skills

Languages: Python, Java, C, Rust, Go, C, C#, C++, LaTeX
Libraries: Numpy, PyTorch, Pandas, Matplotlib/ Plotly, Trimesh
Miscellaneous: Ubuntu, Docker, Teaching (Lab Tutor for EECS 16A)