# Yefan Zhou

yefan0726@berkeley.edu | yefanzhou.github.io | Berkeley, CA, 94709 | 510-809-5378

## Education

**University of California, Berkeley** — Berkeley, CA
*M.Eng in Electrical Engineering and Computer Science; GPA: 3.9/4* — *Aug. 2021 – Dec. 2022*
Coursework: Deep Reinforcement Learning, Artificial Intelligence, Convex Optimization, Data Structures Parallel Computing, Principles and Techniques of Data Science

**Southeast University** — China
*B.Eng in Information Engineering; GPA: 3.7/4* — *Aug. 2016 – Jun. 2020*

## Experience

**UC Berkeley RISELab** — Berkeley, CA
*Machine Learning Graduate Researcher, advised by* **Michael W. Mahoney** — *Aug. 2021 –*

- First author of a paper on single-view 3D reconstruction in **3DV 2021** (see Publication);
- Proposed a evaluation metric **Dispersion Score** to guide 3D vision dataset design and improve model generalization.
- Co-authored a paper on **ME-Prune**, a pruning algorithm for removing redundant channels in convolutional networks.
- ME-Prune improves test accuracy by **3%** compared to SOTA with 50% weights pruned on CIFAR-100 dataset.

**UC Berkeley Mechanical Systems Control Lab** — Berkeley, CA
*Robotic Research Intern, advised by* **Masayoshi Tomizuka** — *May 2020 – Jun. 2021*

- Co-authored a paper on supervised learning based robotic grasping in **ICRA 2022**;
- Proposed a novel variant of loss (**MLGSL**) and **attention-based** model architectures to predict grasps with a single-view depth image, focus on tackling data label sparsity issue.
- MLGSL is **8**× more data-efficient than SOTA with a **91.8%** grasp success rate in real-world experiments.

## Projects

**H-PG** | *Python, PyTorch* | *co-advised by* **Sergey Levine** — *Aug. 2021 – Dec. 2021*

- Proposed Hybrid Policy Gradient (**H-PG**), a novel deep reinforcement learning framework for robotic grasping task defined in continuous-discrete hybrid action space;
- H-PG improves baseline by **7.4%** of grasp success rate on YCB dataset in **PyBullet** simulator.

**Navigation Map of Berkeley** | *Java* — *Sep. 2020 – Oct. 2020*

- Created a web mapping app for the Berkeley area in **Java** with rastering, auto-complete search, routing features;
- Implemented **K-d Tree** to speed up localization and **memory-optimizing A*** for optimal routing.

**World Exploration Engine** | *Java* — *Nov. 2020 – Dec. 2020*

- Built a tile-based interactive game (like Zelda II) in **Java**;
- Implemented pseudo-randomly world generation algorithm, pathfinding AI NPC, and saving/loading features.

## Publication

- **Y. Zhou**, Y. Shen, Y. Yan, C. Feng, Y. Yang "A Dataset-Dispersion Perspective on Reconstruction Versus Recognition in Single-View 3D Reconstruction Networks." *2021 International Conference on 3D Vision* (3DV)
- X. Zhu, **Y. Zhou**, Y. Fan, J. Chen, M. Tomizuka "Learn to Grasp with Less Supervision: A Data-Efficient Maximum Likelihood Grasp Sampling Loss." *2022 International Conference on Robotics and Automation* (ICRA)
- A. Zhao, Y. Yang, E. Ye, Z. Liu, X. Yue, V. Shirsat, **Y. Zhou**, K. Keutzer, J. Gonzalez, R. Kannan, M. Mahoney "ME-Prune: Highly Compressed and Robust Neural Networks via Matrix Entropy Based Channel Pruning." Under Review, *2022 Conference on Computer Vision and Pattern Recognition* (CVPR)
- X. Zhu, Y. Fan, C. Wang, **Y. Zhou**, S. Jin, M. Tomizuka "Multi-Fingered Grasp Pose Detection using Point Cloud." Under Review, *IEEE Robotics and Automation Letters* (RAL)

## Technical Skills

**Programming**: Python, Java, C/C++, MATLAB, JavaScript, Git, PyTorch, Numpy, Pandas, scikit-learn, OpenCV

**Learning:** SVM, PCA, Clustering (K-means, Affinity Propagation, etc), RL Algorithms (Q-Learning, Offline RL. etc), Deep Models (Transformers, CNN), Compression (Pruning)