# Yefan Zhou

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## Education

**Dartmouth College** — Hanover, NH
*Ph.D. candidate in Computer Science* — *Sep. 2023 – present*
Advisor: Prof. Yaoqing Yang
Research Area: Efficiency and transparency of ML, LLM pruning/fine-tuning/mixture-of-expert, Model diagnostic

**University of California, Berkeley** — Berkeley, CA
*Master in Electrical Engineering and Computer Science; Major GPA: 4.0/4.0* — *Aug. 2021 – Dec. 2022*
Advisor: Prof. Michael Mahoney
Research Area: Pruning for model efficiency

**University of California, Berkeley** — Berkeley, CA
*Exchange Student; GPA: 4.0/4.0* — *Jan. 2019 – May. 2019*

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

## Publication

*Selected first-author paper:*

1. {H. Lu*, **Y. Zhou***}, S. Liu, Z. Wang, M. W Mahoney, Y. Yang "AlphaPruning: Using Heavy-Tailed Self Regularization Theory for Improved Layer-wise Pruning of Large Language Models" (**NeurIPS 2024**)
   LLM pruning · Efficient inference

2. {H. Lu*, X. Liu*, **Y. Zhou***, Q. Li*}, H. Yang, Y. Yan, K. Keutzer, M. W. Mahoney, Y. Yang "Sharpness-diversity tradeoff: improving flat ensembles with SharpBalance" (**NeurIPS 2024**)
   Training data selection · Ensembling · Out-of-distribution

3. {**Y. Zhou***, J. Chen*}, Q. Cao, K. Schürholt, Y. Yang "MD tree: a model-diagnostic tree grown on loss landscape" (**ICML 2024**)
   Model selection · Scaling law · Hyperparameter tuning

4. {**Y. Zhou***, T. Pang*}, K. Liu, C. H Martin, M. W Mahoney, Y. Yang "Temperature Balancing, Layer-wise Weight Analysis, and Neural Network Training" (**NeurIPS 2023 Spotlight**)
   NN optimizer · Efficient training · Layer quality analysis

5. **Y. Zhou**, Y. Yang, A. Chang, M. W Mahoney "A Three-regime model of Network Pruning" (**ICML 2023**)
   NN pruning · Model selection · Losslandscape analysis

6. **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 2021**)

*Collaborating or advising paper:*

7. {Z. Liu*, Y. Hu*}, T. Pang, **Y. Zhou**, P. Ren, Y. Yang "Model Balancing Helps Low-data Training and Fine-tuning" (**EMNLP 2024 main Oral**)
   LLM fine-tuning · Low-resource training

8. P. Qing, C. Gao, **Y. Zhou**, X. Diao, Y. Yang, S. Vosoughi "AlphaExpert: Assigning LoRA Experts Based on Layer Training Quality" (**EMNLP 2024 main**)
   LLM fine-tuning · Mixture-of-expert

9. 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 2022**)

10. K. Schürholt, L. Meynent, **Y. Zhou**, Y. Yang, D. Borth "A Model Zoo on Phase Transitions in Neural Networks" (Preprint)

## Professional Experience

**Research Engineer, International Computer Science Institute** Berkeley, CA
*supervised by* **Prof. Michael Mahoney** *Jan. 2023 – Jun. 2023*

- Researched efficient optimization method for deep neural network.
- Researched ensembling methods for improving the OOD robustness of CV models.
- Developed backdoor detection methods to enhance AI model safety.

**Graduate Research Assistant, Sky Computing Lab (RISELab), UC Berkeley** Berkeley, CA
*advised by* **Prof. Michael Mahoney** *Aug. 2021 – Dec. 2022*

- Researched neural network pruning for CNNs and Transformers.

## Services and Award

**Reviewers**: ICLR 2025-2024, NeurIPS 2023, AAAI 2024, ICML 2024, CVPR 2024, CPAL 2024, IROS 2022, TMLR

**Talk**

* Invited talk at AI-TIME, "Phase transition, loss landscape and model diagnostics", Jan., 2024.
* Invited talk at UC Berkeley/ICSI TrojAI onsite, "Layer-wise Weight Analysis, and Neural Network Training" Oct. 2023
* Invited talk at UC Berkeley/ICSI TrojAI onsite, "A Three-regime model of Network Pruning" Mar. 2023

**Award**: ICML 2024 Scholar Award, NeurIPS 2023 Scholar Award

**Teaching (Head TAs)**: CS70: Foundations of Applied Computer Science (Dartmouth College Spring 2024)

## Skills

**Programming Language**: Python, Java, C/C++, CUDA, SQL, MATLAB

**Developer Tools**: PyTorch, Ubuntu, MujoCo, ROS, PyBullet, Slurm, PyRender, Open3D