Zhizhou Sha

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EDUCATION

Tsinghua University   September 2020 - June 2025

B.Eng. in **Computer Science and Technology**   Beijing, China

- **GPA**: 3.83 / 4.00
- **Honors**: Comprehensive Scholarship (Top 30%), Tsinghua University. 2023, 2024
- **Selected Courses of A or A+**:
  * Research on Trending Topics in Natural Language Processing; Fundamentals of Computer Graphics
  * Introduction to High Performance Computing; Computer Architecture; Cybersecurity Fundamentals; Database Special Topic Training; Principles and Practice of Compiler Construction

RESEARCH EXPERIENCE

Remote Research Intern   March 2024 - Present

Advised by **Yingyu Liang**, **Zhenmei Shi**, and **Zhao Song**.

- Dissecting submission limit in desk-rejections: A mathematical analysis of fairness in ai conference policies (**ICML 2025**)[**Paper**].
- Differential Privacy Mechanisms in Neural Tangent Kernel Regression (**WACV 2025**). [**Paper**].
  We provide DP guarantees for NTK Regression, while ensuring the PSD property of the NTK kernel matrix.
- Looped ReLU MLPs May Be All You Need as Programmable Computers (**AISTATS 2025**). [**Paper**].
  We explore the capability upper bound of the Looped ReLU MLP and prove its capability is equivalent to a programmable computer.
- HSR-Enhanced Sparse Attention Acceleration (**CPAL 2025**). [**Paper**].
  We leverage the sparsity in ReLU attention and combine it with the HSR data structure to improve the computation time of cross attention from $O(mnd)$ to $O(mn^{4/5}d)$.

mlPC Lab @ University of California San Diego   June 2023 - December 2023

Advised by **Zhuowen Tu**.

- TokenCompose: Text-to-Image Diffusion with Token-level Supervision (**CVPR 2024**). [**Paper**], [**Project Page**].
  Incorporate a token-level loss into the fine-tuning objective of Stable Diffusion Models, thereby augmenting the capability for compositional generation of instances across multiple categories.
- OmniControlNet: Dual-stage Integration for Conditional Image Generation (**CVPR 2024 Workshop**). [**Paper**].
  Unify the external condition control for image generation in a single dense model.
- Dolfin: Diffusion Layout Transformers without Autoencoder (**ECCV 2024**). [**Paper**].
  Enhance layout generation capability of Diffusion models by removing the autoencoder.

Conference Reviewer: AAAI / WACV / ICLR 2025.

INTERNSHIP EXPERIENCE

Research Intern @ Bytedance   December 2023 - January 2024

- Finetune LLMs to review posts of an APP according to some given rules, checking if the text context of the post violates the given rules, reducing the need for manual labeling efforts.

SKILLS

Language: Mandarin Chinese (Native), English (Proficient)

Programming Skill: Python (PyTorch), LaTeX, Linux, C++, JavaScript, Verilog, VHDL, CUDA.