

Zhuoli Ouyang | Curriculum Vitae

Beijing – China

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Personal Information

Date of Birth: 2004-10-15

Nationality: China

GPA: 3.94/4.00 (last year), 3.88/4.00 (total)

Languages: English, Chinese, Japanese

Research Interest

I am an undergraduate student with a strong foundation in mathematics and AI. My research interests span **generative models**, **reinforcement learning**, and **optimization**, with a focus on building more **efficient AI** systems. I am particularly excited about **embodied AI** and the challenge of enabling agents to perceive, reason, and act in complex environments. I aim to bridge principled mathematical thinking with practical system design, and look forward to contributing to research at the frontier of these areas.

Education

Southern University of Science and Technology—Second-year undergraduate

Information Engineering, Dept. of Electronic & Electrical Engineering, China

GPA: 3.88, Rank: **4/46**, Honor Class

Signals and Systems (97/100) [Signal & Systems](#), Engineering Mathematics (95/100), Probability Theory and Mathematical Statistics (95/100)

Shenzhen

2024–Present

Southern University of Science and Technology—First-year undergraduate

Department of Mathematics, China

GPA: 3.86, Rank: **94/1346** (overall in university), **Top 7%**, Fields Elite Class (Honor Class)

Algebraic Geometry (Graduate level), Advanced Functional Analysis (Graduate level), Analysis (97/100, Honor) [Analysis](#), Advanced Algebra (97/100, Honor), C programming (95/100)

Shenzhen

2023–2024

Tsinghua University High School

High School Diploma, China

Beijing

2020–2023

School Affiliated to Tsinghua University

Secondary Education, China

Beijing

2017–2020

Honors & Awards

2026: ALT 2026 Best Student Paper Award

2026: ISIT 2026 Strong Accept

2026: DATE 2026 Oral Paper (ACEMARL)

2024: SUSTech, Department of Electronics and Electrical Engineering–(Honor Class)

2023: SUSTech, Mathematics Department - Fields Elite Class (Top 1%, Honor Class)

Publications

RMNP: Row-Momentum Normalized Preconditioning for Scalable Matrix-Based Optimization *ICML 2026*
Shenyang Deng, Zhuoli Ouyang* et al. (*Equal contribution)* [\[arXiv\]](#) [\[ICML\]](#) [\[Project Page\]](#)

OmniOpt: Taxonomy, Geometry, and Benchmarking of Modern Optimizers *arXiv 2026*
Siyuan Li, Jiabao Pan*, Yumou Liu*, Zhuoli Ouyang*, Xin Jin* et al. (*Equal contribution)* [\[arXiv\]](#) [\[Project Page\]](#)

Understanding Generalization from Embedding Dimension and Distributional Convergence *ICML 2026*
Junjie Yu, Zhuoli Ouyang*, Haotian Deng*, Chen Wei, Wenxiao Ma et al. (*Equal contribution)* [\[arXiv\]](#) [\[ICML\]](#)

Depth, Not Data: An Analysis of Hessian Spectral Bifurcation *ISIT 2026*
Shenyang Deng, Boyao Liao*, Zhuoli Ouyang* et al. (*Equal contribution)* [\[arXiv\]](#) [\[Project Page\]](#)

Suspicious Alignment of SGD: A Fine-Grained Step Size Condition Analysis *ALT 2026*
Shenyang Deng, Boyao Liao, Zhuoli Ouyang et al. [\[arXiv\]](#) [\[Project Page\]](#)

Doloris: Dual Conditional Diffusion Implicit Bridges with Sparsity Masking Strategy for Unpaired Single-Cell Perturbation Estimation *ICLR 2026*
Changxi Chi, Jun Xia, Yufei Huang, Zhuoli Ouyang et al. [\[OpenReview\]](#)

ACEMARL: Adaptive Clustering Enhanced Multi-Agent Reinforcement Learning for Analog Circuit Sizing *DATE 2026*

Han Wu*, Haoning Jiang*, Zhuoli Ouyang et al. (* Equal contribution)

[\[ResearchGate\]](#)

FD-MAGRPO: Functionality-Driven Multi-Agent Group Relative Policy Optimization for Analog-LDO Sizing *AAAI 2026*

Haoning Jiang*, Han Wu*, Zhuoli Ouyang et al. (* Equal contribution)

[\[AAAI\]](#)

Research & Study Experience

Dartmouth College

Hanover, NH

Research Intern – Optimizers & Learning Theory

2025–Present

Advisor: [Yaoqing Yang](#)

Working on optimization algorithms and learning theory, contributing to theoretical analysis and algorithm design for machine learning.

Achievement: ICML 2026; ALT 2026 (Best Student Paper Award); ISIT 2026

Shanghai AI Laboratory & OpenDataLab

Shanghai

Research Intern – Optimizer Benchmark & Survey

2025–Present

Advisors: [Cheng Tan](#), [Siyuan Li](#)

Conducting a comprehensive benchmark and survey of optimization algorithms for large-scale AI, covering classical and modern optimizers across convergence, efficiency, and generalization.

AI for Scientific Simulation and Discovery Lab, Westlake University

Hangzhou

Research Intern

2025–Present

Advisor: [Tailing Wu](#)

Working on generative AI methods for scientific simulation and discovery, spanning AI for physical sciences and AI for life science.

HKUST (Guangzhou)

Guangzhou

Research Intern – Theory-First Learning & Optimization for AI

2025–Present

Advisor: [Yao Shu](#)

Working on foundational optimization and learning theory for large-scale AI systems. Research spans black-box optimization (zeroth-order, Bayesian, bandit, RL), learning dynamics (generalization, stability, robustness), and their application to LLMs and intelligent agents.

Neural Computing and Control Lab (NCC Lab), SUSTech

Shenzhen

Research Intern – Generalization Theory for Deep Learning

2025–Present

Advisor: [Quanying Liu](#)

Working on generalization theory for deep learning, understanding generalization from embedding dimension and distributional convergence.

Achievement: ICML 2026

SUSTech

Shenzhen

AI for EDA

2025

Advisor: [Junmin Jiang](#)

Applying Reinforcement Learning and AI algorithms to analog circuit design.

Achievement: AAAI 2026, DATE 2026

Other Skills

Programming: Python, C, C++, MATLAB, LaTeX, etc.

Software: PyTorch, PETSc, MATLAB, Fluent

Soccer: Second-class National Athlete in Football

Piano: Level 8, Central Conservatory of Music, Beijing

Hobbies: Exploring mathematics, Coding, Philosophy and History, Playing piano, Playing soccer