Xiaopeng Zhang

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EDUCATION BACKGROUND

Toyota Technological Institute at Chicago **Chicago, US**
Visiting Student, advised by Prof. Matthew R. Walter *March 2025 - Present*

Data Science Institute (DSI), University of Chicago **Chicago, US**
M.S. in Data Science | GPA: 3.84/4.00 *Sept 2024 - June 2026*

Institute for Advanced Study (IAS), Shenzhen University **Shenzhen, China**
B.S. in Mathematics and Applied Mathematics, ***Graduate with Honor*** *Sept 2020 - June 2024*
Cumulative GPA: 4.21/4.5 (Weighted Average Score: 91.8) Ranking: Top 1 (1/17 in mathematics, 1/57 in IAS)

AWARDS & ACHIEVEMENTS

- **National Scholarship** (TOP 0.2% nationwide), Chinese Ministry of Education 2022-2023
- Outstanding Graduate with Honor (top 1%) 2024
- **National First Prize** in the 14th National Mathematics Competition (**36th nationwide**) 2023
- **National Second Prize**, China Undergraduate Mathematical Contest in Modeling 2023
- **First Prize in Guangdong Region**, 13&14th National Mathematics Competition 2021, 2022
- Outstanding Innovative Talent (First Prize) 2020-2023
- Star of Learning (First Prize) - Top 1 in IAS 2021, 2022, 2023
- Discipline Scholarship (Top 0.5% in National College Entrance Examination, 642/750) 2020

RESEARCH EXPERIENCE

Robot Intelligence through Perception Laboratory (RIPL), TTIC Advisor: Matthew R. Walter

1. StackGen: Generating Stable Structures from Silhouettes via Generative Model March 2025 - Present
   - Developed an end-to-end system generating 3D block structures that are visually consistent with multi-view silhouettes and physically stable under gravity by both **DDPM and Flow Matching** approaches with transformer-based architectures condition on multi-view silhouettes
   - Trained a **Graph Neural Network** to predict stability by modeling support relations as graph edges
   - Developed **energy-guided diffusion** by per-block accelerations for physics-aware generation
2. Assist When You Need November 2025 - Present
   - Implemented **Flow Matching** for preserving user safe commands deemed by the model in shared autonomy rather than adding residual correction, respecting user intent even if suboptimal

TEACHING EXPERIENCE

Teaching Assistant, **Advanced Calculus**, IAS, SZU Sept 2022 - Jan 2023
Teaching Assistant, **Advanced Algebra**, IAS, SZU Sept 2023 - Jan 2024

STANDARDIZED TESTS

- **GRE Mathematics Subject Test:** 900 (93%)

SKILLS

- **Programming**: Python, MATLAB, R
- **Coding Frameworks**: PyTorch, TensorFlow, ROS
- **Tools/Platform**: Git, Docker, Google Cloud Platform, Huggingface
- **Research Areas**: Robotics, Diffusion Models, Generative Models
- **Languages**: Chinese (Native), English (Fluent)