

# Runnel Zhang

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## Education

### Nanjing University

Nanjing, Jiangsu, CN

2025-09-01 to 2029-06-30

Undergraduate Student (Jianxiong Academy)

## Awards & Honors

### National High School Mathematics Olympiad (Preliminary Round)

2024 | National Second Prize

### National High School Mathematics League

2024 | Provincial First Prize

### National High School Biology League

2024 | Provincial First Prize

### CCF Certified Software Professional (Senior Level)

2023 | National Second Prize

## Academic Programs

### Peking University 2025 Winter School for Outstanding High School Students

2025-01 | Selected participant

### Peking University 2024 Summer School for Outstanding High School Students, Yuanpei College

2024-07 | Selected participant

## Academic & Professional Engagement

## NJU AIA (Nanjing University Artificial Intelligence Association)

Core Member & Teaching Assistant | 2025-09 - Present

- Serve as a core member in organizing academic activities and technical sharing sessions for the association, focusing on AI basic theory and practical application popularization.
- Provide one-on-one Q&A guidance for undergraduate members on Python programming, machine learning fundamentals, and assist in organizing hands-on experimental courses.
- Scheduled to host a teaching session on Variational Autoencoder (VAE) for the association in the next semester, designing practical cases to help members understand model principles and application scenarios.

## NJU NOVA (Nanjing University Intelligent Data Decision Studio)

Core Member | 2025-09 - Present

- Deliver two lectures on full-stack development for studio members, covering front-end and back-end technology integration, project engineering practices, and problem-solving in actual development.
- Participate in the studio's multi-source information aggregation projects, responsible for designing technical solutions and developing core modules, collaborating with team members to ensure project progress and integration efficiency.

## Works

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### Navigating the Full-Stack Ecosystem: Implementation Strategies and Knowledge Graphs for Information Aggregation

2025-12-06 | lecture-speech | Zenodo

DOI: [10.5281/ZENODO.17852269](https://doi.org/10.5281/ZENODO.17852269)

### Architectural Paradigms in Collaborative Software Engineering: A Comprehensive Analysis of the Nova Project

2025-11-29 | lecture-speech | Zenodo

DOI: [10.5281/ZENODO.17765724](https://doi.org/10.5281/ZENODO.17765724)

### Gravitational Fields of Non-Spherical Mass Distributions: Analysis and Orbital Dynamics

2023-02-01 | blog-post

DOI: [10.6084/M9.FIGSHARE.22268917](https://doi.org/10.6084/M9.FIGSHARE.22268917)

### On the Factorization of Cyclotomic-Type Polynomials $\sum_{i=0}^k x^{in}$ and Their Divisibility Properties

2023-01-27 | preprint

DOI: [10.6084/M9.FIGSHARE.22268908](https://doi.org/10.6084/M9.FIGSHARE.22268908)

### Rethinking Set Theory - Chinese Translation

2022-01-31 | translation

DOI: [10.6084/M9.FIGSHARE.20310039](https://doi.org/10.6084/M9.FIGSHARE.20310039)

## A Chaotic Preview Note on Hopf Fiberation

2021-08-06 | blog-post

DOI: [10.6084/M9.FIGSHARE.20310042](https://doi.org/10.6084/M9.FIGSHARE.20310042)

## A Friendly Introduction to Boolean Algebra

2021-08-04 | blog-post

DOI: [10.6084/M9.FIGSHARE.20310033](https://doi.org/10.6084/M9.FIGSHARE.20310033)

## Ongoing Projects

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### Robust Semantic Reconstruction for Tangut Script Translation

- **Evolution:** Initial focus was on **rule-based dictionary mapping** and **hardcoded idiomatic phrase** handling to basic **LLM sequence correction** for translation refinement. This proved limited by data sparsity inherent to the Tangut language.
- **Current Focus:** Shifting from purely sequence-based translation to **structural feature extraction**. Utilizing advanced **Transformer Attention Mechanisms** (potentially incorporating pre-trained multilingual models) to build a robust **Character-Level Embedding Space**, specifically combating low-resource data issues.

PREVIOUS REPOSITORY: [https://github.com/ChouYuanjue/Tangut\\_Chinese\\_Translator](https://github.com/ChouYuanjue/Tangut_Chinese_Translator)

### Controllable Symbolic Synthesis via Hierarchical Representation Learning

- **Evolution:** Iterative self-driven exploration using standard generative models. The path progressed from **U-Net** (basic feature extraction) → **U-Net with SE Attention** (incorporating channel awareness) → **LoRA + Diffusion Models** (achieving fine-grained style control).
- **Current Focus:** Transitioning beyond raster/pixel-based diffusion to **Vector Graphics Representation**. Implementing **DeepSVG Architectures** to learn the intrinsic structural composition of symbols.

PREVIOUS REPOSITORY: [https://github.com/ChouYuanjue/AI\\_Emoji\\_Kitchen\\_Lab](https://github.com/ChouYuanjue/AI_Emoji_Kitchen_Lab)