Zichen Zhao

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Education

Nanjing University of Aeronautics and Astronautics, Electrical and Information Engineering — Nanjing, China
B.S. of Engineering, GPA: 3.5/5.0, CET-6 500 — *Sep. 2022 - Jun. 2026*

- **Selected Coursework: Digital Circuits and Logic Design (93/100), Computer Programming(C/C++)(92/100), Communication Electronics Circuits(91/100), Operating System(90/100), Advanced English(95/100)**:

Experience

Research Project — Nanjing, China
Improved HandsOnVLM(temporarily named) — *Mar. 2025 - Sept. 2025*

- **Contribution**: Enhanced the Trajectory Decoder by integrating a diffusion-based generative mechanism, enabling more diverse and accurate trajectory predictions. Additionally, investigated its potential to improve multimodal understanding and action reasoning within Vision-Language-Action (VLA) frameworks.
- **Keywords**: Vision-Language Models, Vision-Language-Action, Embodied Intelligence
- **Current Status**: Exploratory Work (On Hold due to resource reallocation)

Research Project — Nanjing, China
Weighted Reverse Convolution for Feature Upsampling in Vision Foundation Models — *Sept. 2025-Present*

- **Contribution**: Developed Weighted Reverse Convolution (WRC), a highly efficient upsampling architecture derived from a Tikhonov-regularized inverse problem formulation. By solving the optimization objective via a differentiable, closed-form FFT solver, the module avoids expensive iterative computations, effectively recovering fine-grained discriminative structures with minimal inference overhead.
- **Keywords**: Computer Vision, Vision Foundation Models, Machine Learning
- **Status**: Already submitted to ICML, under review

Independent Research Project — Nanjing, China
Improved YOLOv11 for Aerial Small Object Detection — *Mar. 2025 - Present*

- **Contribution**: Developed an enhanced YOLOv11-based algorithm tailored for UAV aerial imagery.
- **Progress**: Designed a modified detection head supporting P2–P5 inputs, inspired by the AFPN architecture, and introduced a progressive feature fusion strategy to mitigate semantic gaps and information loss.
- **Performance**: Achieved moderate improvements on VisDrone2019, raising mAP50 from 34.8% to 38.1% and mAP50–95 from 20.4% to 22.9% over baseline YOLOv11.
- **Application**: Integrated as a vision module for a UAV-based anti-drone system (the project awarded Grand Prize in the Challenge Cup), providing basic target localization support.

Internships

Zhejiang University — Hangzhou, China
Intern of summer camp, College of CS — *Jul. 2025 - Aug 2025*

Project: AI Study Companion

- **Contribution**:
  - Developed workflows and plugins on the Coze platform by integrating APIs of open-source text-to-image (t2i) and text-to-video (t2v) models.
  - Developed the frontend of a WeChat Mini Program for t2i and t2v generation, integrating APIs from workflows built on the Coze platform.
  - Leveraged Volcengine Object Storage Service to temporarily store media assets and enable asynchronous long-video processing, and developed a custom object storage plugin in the Coze IDE utilizing this service.

Skills

- **Deep-learning**: PyTorch, TensorFlow
- **Programming**: Python, C++, Golang, git, Linux/Bash/Shell scripting,

Awards

The Challenge Cup National Competition — Nanjing, China
Grand Prize — *Nov. 2025*

LanQiao Cup, Jiangsu Provincial Contest – C/C++ Category — Nanjing, China
Third Prize — *May 2024*

Academic Scholarship — Nanjing, China
Third and Second Prize — *2022, 2023, 2024*

Outstanding Student Scholarship — Nanjing, China
Second Prize — *2022, 2023, 2024*