

ZHILIN ZHANG

+86 173-2100-0308 zz10068@nyu.edu
[linkedin.com/in/Zhilin-Zhang](https://www.linkedin.com/in/Zhilin-Zhang) github.com/Hadlay-Zhang

Education

New York University (Tandon School of Engineering), New York, USA
M.S. in Computer Science

Sep 2024 – Mar 2026

Tongji University, Shanghai, China

Sep 2020 – Jul 2024

B.E. in Computer Science and Technology, Overall GPA: 4.31/5.0; 88.11/100

Courses: Data Structure (A), Software Engineering (A), Data Mining (A), Machine Learning (A), Computer Vision (A), Natural Language Processing (A)

Honors and Awards: S(Successful) Award of MCM/ICM Mathematical Modeling Competition (2023.02); Tongji University Scholarship for Undergraduate Freshmen (2020-2021); Tongji Undergraduate Third-Class Scholarship (2021-2022, 2023-2024)

Research Experience

Research Assistant, Visual Question Answering (VQA)

Mar 2023– May 2024

mentored by Jiaxi Yang (Columbia University) and Zhi Liu (Zhejiang Lab)

Multi-modal Machine Learning

- First author of the paper "Enhanced Visual Question Answering: A Comparative Analysis and Textual Feature Extraction Via Convolutions," **submitted to ACML 2024**. Arxiv Link
- Conducted a thorough investigation comparing different text models including TextCNN, GRU, LSTM, and Transformer Encoder on the VQA-v2 dataset, revealing that complex models like Transformer Encoder often underperform compared to simpler sequence models such as GRU and LSTM in VQA tasks.
- Proposed an innovative ConvGRU model that integrates convolutional layers with GRU to improve local feature extraction from text, enhancing model performance on the VQA-v2 dataset without substantially increasing parameter complexity.
- Conducted extensive case studies demonstrating the practical benefits of the added convolutional layers in extracting local textual information and analyzed the text length distribution in the VQA-v2 dataset, leading to improved VQA task accuracy.

Research Assistant

Jan 2023– Present

Shanghai Research Institute for Intelligent Autonomous Systems

SOTIF, Driver Takeover

- Tested and explored intended functional safety design of a driver monitoring system based on SOTIF theory.
- Developed a novel approach to quantify the intended functional safety risks associated with the driver's sight during takeovers, bridging the gap in existing models which lacked comprehensive risk quantification mechanisms.
- Provided robust theoretical support and served as a reliable guide for designing Driver Monitoring Systems (DMS).

Research Assistant

Jun 2022– Oct 2022

Shanghai Research Institute for Intelligent Autonomous Systems

Re-Identification

- Second inventor** for the patent: "A Method for Smart Parking Based on Spatio-Temporal Vehicle Re-Identification" Patent Link
- Put forward a solution for smart parking based on vehicle re-identification, spatial-temporal correlation, sensorless payment, and the architecture of the automated parking system.
- Drafted the patent claims draft and description, designed point-based pathfinding algorithms and YOLOv5-based vehicle license plate recognition algorithms.
- Patent has been granted and published (Patent Number: ZL 2023 1 0130800.4).

Internships

Research & Development Intern

Sep 2023– Jan 2024

Momenta Automotive Technology Co., Ltd.

C++; Bash

- Constructed thorough test scenarios for autonomous driving state transitions based on ROS, ensuring robust and accurate simulation environments.
- Developed and maintained test code using Shell scripts for various client releases of autonomous driving software, ensuring each release met stringent quality and functionality standards.
- Assisted in designing and developing clustering standards for autonomous driving fault diagnosis, collaborating across departments to align code with fault categorization standards, enhancing overall system reliability and safety.

Assistant Software Engineer

Jun 2023– Sep 2023

Ronovo (Shanghai) Surgical Technology Co., Ltd.

- Developed embedded audio communication software for the control center of the surgical robot and manual control panel, conducting thorough function testing to ensure reliability.
- Implemented a high-quality, low-latency two-way audio communication system using the GStreamer framework and audiornnoise plugin, optimizing for performance and clarity.
- Examined and fine-tuned the audio pipeline, adjusting parameters to accommodate various audio equipment and sound cards procured by the hardware department, ensuring seamless integration and functionality.

Notable Projects

Enhanced Medical Visual Question Answering via Transformers

Sep 2023– Jun 2024

Undergraduate Thesis mentored by Xiaoliang Gong (Associate Professor)

Pytorch; Multi-modal Learning

- Proposed a new Med-VQA framework that replaced traditional CNN-based Image Encoders and RNN-based Text Encoders with **ConvNeXt** and **BioBERT**. This approach achieved performance improvements without requiring additional techniques such as Data Augmentation or Transfer Learning.
- Proposed a novel fusion method named **Self-Attended Bilinear Fusion**, which combines Self-Attention and Bilinear Attention Networks (BAN). This method achieved nearly a **5%** accuracy improvement on the VQA-RAD dataset without significantly increasing computational complexity.
- Conducted extensive comparative experiments on the Image Encoders, Text Encoders, and fusion methods.
- Planning to submit the thesis outcomes to **BIBM 2024**, Project Link: MedVQA

Multi-User File System Using Sockets and Multi-threads

Apr 2023– Jun 2023

Course Project from TJCS 100436 Operating System, mentored by Rong Deng (Lecturer)

C++; Operating System

- Implemented a multi-user file system using C++ based on Linux Socket and Pthread.
- Created basic file system APIs such as: read, write, cd, ls, touch, mkdir.
- Project Link: *Multi-user-SecondFileSystem*

Campus Dining Review Mini Program

Mar 2023– Jun 2023

Capstone Project mentored by Junqiao Zhao (Associate Professor)

PHP; Software Engineering

- Developed and deployed back-end functionality using the ThinkPHP framework on a lightweight server, implementing modules for friends, chat, and cafeteria-related features.
- Designed relational databases with Navicat, created and tested team interfaces using Apifox, and collaborated effectively with the front-end development team.
- Conducted comprehensive testing from the perspectives of users, merchants, cafeterias, and administrators, identifying and resolving over 10 issues to ensure smooth system operation.
- Project Link: College-Dining-Review

Additional Skills

- **Languages:** Chinese (Native), English (High Proficiency)
- **Standard Tests:** TOEFL (R28, L24, S25, W28), GRE (V154, Q170)
- **Programming Skills:** C++ (High Proficiency), Python (High Proficiency), PyTorch(High proficiency), Shell (High Proficiency), PHP (Elementary)