Zhiyu Liu (Quentin Liu)

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EDUCATION

UCLA Master of Engineering. Focus on Artificial Intelligence. Sept. 2024 - Dec.2025

Shanghai Jiao Tong University | ParisTech Elite Institute of Technology (SPEIT) Sept. 2020 - June 2024

Bachelor's Degree in French Language & Information Engineering

- **GPA: Information Engineering (91/100)**, French Language (87/100)
- **Selected courses:** C Program and Algorithm Analysis (91), Data Structure (94), Probability & Statistics (96), Database System Concepts (93), Machine Learning (96), Computer Networks (91), Computer Organization and Architecture (93)
- **Honors and Awards:** Merit Student Honor (4%), University student B scholarship of excellence (15%), Outstanding graduate of Shanghai Jiao Tong University (15%)

PROFESSIONAL EXPERIENCES

MINIMAX, LLM Engineer Mar. 2024 - June 2024

- Led the development of repo-level datasets for model pre-training, producing 20 billion tokens, which significantly enhanced the model's abilities in handling cross-file code and long-text data
- Engineered a dependency graph from Wikidata internal references using mwparserfromhell and built long context wikidata through topological sort, producing 30 billion tokens
- Orchestrated the scraping, quality assessment, and rewriting of over 20,000 LeetCode QA pairs using GPT-4, producing 16 million tokens that notably enhanced the model's capabilities in solving algorithmic problems
- Expanded evaluation framework of self-developed ABAB model on various open-source benchmarks, incl. HumanEval(+), Mbpp(+), Natural Code Benchmark, and DS1000, enabling a more comprehensive assessment of model abilities

SELECTED PROJECTS

Medical Image Segmentation of Brain Tumors Jul. 2022 - Aug. 2022

Imperial College Data Science Summer School - **The Best Computer Vision Project Award (1st out of 12 groups)**

- Led a team of 3 in a medical image segmentation project, focusing on accurately labeling and segmenting brain tumors within a dataset of over 3,000 MRI scans with corresponding masks
- Adopted widely-used Unet++ architecture. Conducted a comprehensive evaluation of alternative loss functions incl. Lovasz Hinge and BCE-DICE, selecting BCE-DICE for its superior validation Intersection over Union (IoU) vs Lovasz Hinge (0.825 vs. 0.792)
- Achieved outstanding results in an unseen dataset, with a Dice score of 0.779 vs. the average of 0.699

Crowd Counting Model Based on CNN and ViT Dec. 2022 - Apr. 2023

- Designed a sophisticated crowd counting model which has excellent global contextual comprehension by integrating Convolutional Neural Network (CNN) with Vision Transformer (ViT). Addressed global feature capture limitations in classic CNN models such as Multi-Column CNN (MCNN)
- Demonstrated remarkable performance vs. the original MCNN on the UCF_CC_50 dataset, with a MAE of 362.7 (vs. 377.6) and a MSE of 467.6 (vs. 509.1). Paper accepted for publication

Topography Measurement by EBSD Calibration Feb. 2023 - Mar. 2024

- Improved 6-parameter IDIC-EBSD (Integrated Digital Image Correlation framework for Electron Backscatter Diffraction) calibration method. Established a conversion relation between diffraction pattern center coordinates (XYZ) and surface topography (h), reducing calibration parameters from 6 to 4, significantly boosting measurement precision
- Conducted particle diffraction experiments, obtaining multiple diffraction patterns for silicon crystalline samples
- Designed a novel loss function employing 4 parameters: three Euler angles and surface topography. Coded algorithms, using the Forward Additive Gauss-Newton method to optimize the loss function and derive the corresponding topography. Patent and research paper are in progress

PUBLICATIONS

- **Zhiyu Liu** and Yongqing Qu: Crowd Counting Model based on CNN and Transformer. *Computer Engineering and Information Processing (CEIP), 2023.*
- **Zhiyu Liu**, Zhiyi Zhang, Mohamed Sallak and Siqi Qiu*: *Intelligent Fault Diagnosis of Rolling Bearing based on Incremental Learning. International Conference on System Reliability and Safety Engineering (SRSE), 2024*.
- Qiwei Shi and **Zhiyu Liu**: Topography Measurement by EBSD Calibration. CN Patent Application 12514492. Patent Pending.

EXTRACURRICULAR ACTIVITIES

Project Leader at the Science and Innovation Center Nov. 2020 - Nov. 2022

College Orchestra Team Leader & Violin Performer (c.15 members) Apr. 2021 - June 2024

Others

Languages: Chinese (Native), English (**GRE 337, TOEFL 104**), French (Intermediate) **Hobbies**: Violin

Programing skills: Python, C/C++, MATLAB, SQL **Tools**: Git, LaTeX, MS Office, Tableau