Jiayu Li

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Education

Hong Kong Polytechnic University *MS in Information Technology* *Sept 2024 – Mar 2026 (expected)*

- GPA: 3.71/4.3
- **Coursework:** Natural Language Processing; Multimedia Computing, Systems and Applications; Machine Learning and Data Analysis; Computer Vision and Image Processing etc.
- **Thesis:** Research on Collaborative AI (On going) Proposal*

Hefei University of Technology *Sept 2020 – June 2024*
BS in Mathematics and Applied Mathematics

- GPA: 3.35/4.3
- **Coursework:** Analytic Geometry; Discrete Mathematics; Numerical Analysis; Programming in C++; Programming in C etc.
- **Thesis: Research on Audio-Driven Head Motion Video Generation**
  Original Chinese version*, Short report in English*, GitHub*

Internships

Product Manager *Anhui, China*
iFLYTEK Co., Ltd. *Dec 2023 – Feb 2024*

- Optimized the retrieval-augmented generation model of the iFlytek Spark large language model by analyzing generated answers based on retrieval results for RLHF model optimization.
- Conducted performance analysis of the retriever and compared it with similar retrievers. Followed up on product data analysis and conducted competitive product analysis.

Publications

Facial Key Point Offset Based Framework for Micro-Expression Recognition 2023

Mingzhong Wang, Qingshan Wang, Qi Wang, Zhiwen Zheng, ***Jiayu Li***, Yuting Wang, Xinyang Ma, Yinjie Lu
19th Joint Academic Conference on Harmonious Human-Machine Environment (HHME2023)

Invention Patent

A command-controlled 3D facial animation generation method based on a single face image 2024

Yan Xing, ***Jiayu Li***, Peilin Hong, Shuangguan Liu, Min Hu, Daolun Li, Li Zhang, Jieqing Tan, e.CN. Patent application 202410912502.5 filed in July 2024. Patent Pending.

Research Experience

Research on efficient collaboration between edge and cloud LLMs *Feb 2025 – Present*
Advisor: Prof. Wanyu Lin

- Designed local lightweight models to function as routers and planners, implementing SFT-based local models to allocate tasks according to their complexity. This approach significantly improved the inference capability and overall efficiency of the collaborative edge-cloud system by optimizing task distribution and resource utilization.

Research on Audio-Driven Head Video Synthesis *Dec 2023 – Jun 2024*
Advisor: Prof. Yan Xing

- Spearheaded a groundbreaking project in audio-driven head video generation, with a focus on voice command

recognition, monocular 3D facial reconstruction, and notably, the innovative generation of expression. Employed CNNs and GMM-HMM for voice command recognition, advanced 3D facial reconstruction through 2D landmarks, and pioneered GAN-like method to control expression subtleties at the facial action unit level, a first in the field.

- Won Outstanding Undergraduate Thesis at the school level (Top 2% students in Department of Mathematics)

College Students Innovation and Entrepreneurship Training Program *Dec 2021 – Apr 2023*
A Facial Key Point Offset Based Framework for Micro-Expression Recognition Advisor:
Provincial level Prof. Qingshan Wang

- Preprocessed micro-expression datasets by marking facial landmarks and dividing fixed points, and enhanced micro-expressions using the Eulerian motion amplification algorithm on the $CAS(ME)^3$ dataset. Additionally, developed a long-term sparse deep flow algorithm utilizing depth information to improve micro-expression recognition.
- Won excellent approval of College Students Innovation and Entrepreneurship Training Program at the provincial level (Top 2 of projects in Department of Mathematics)

Project Experience

Retrieval-Augmented Generation (RAG) Knowledge-Based Question Answering system GitHub Link* *Mar 2025 – April 2025*

- Developed a query processing system where users can select the retrieval method -BM25, Word2Vec, ColBERT or a hybrid approach - via a router, ensuring tailored document retrieval from the database. The system features two collaborative agents: the Summary Agent and the Generate Agent. This collaboration between agents effectively transforms user queries into precise answers.

Building an auxiliary learning system based on LLM Streamlit Link* *Nov 2024 – Dec 2024*

- Developed an innovative auxiliary learning system distinct from typical LLMs, focusing on guiding students through thought processes rather than directly providing answers. This system empowers elementary school students by breaking down complex problem-solving into basic steps, using positive and encouraging language to motivate independent completion. It offers simple guidance, examples, and hints, and uses multiple-choice questions as prompts to facilitate learning. Additionally, it provides key knowledge reviews to help students connect new concepts with prior learning, fostering a deeper understanding.

Honors and Awards

Outstanding Undergraduate Thesis Award *Jun 2024*
Top 2% students in Department of Mathematics, Hefei University of Technology

Outstanding Student Scholarship *Dec 2023*
Top 10% students in Department of Mathematics, Hefei University of Technology

Outstanding Student Scholarship for Excellence in Scientific & Technological Activities *Dec 2023*
Top 2% students in Department of Mathematics, Hefei University of Technology

Silver Award of the 8th Anhui Province "Internet Plus" Innovation and Entrepreneurship Competition *Nov 2022*
Department of Education of Anhui Province

Gold Award of the 8th Hefei University of Technology "Internet Plus" Innovation and Entrepreneurship Competition *July 2022*
Hefei University of Technology

Outstanding Student Scholarship *Dec 2021*
Top 10% students in Department of Mathematics, Hefei University of Technology

Merit Student *Dec 2021*
Top 2% students in Department of Mathematics, Hefei University of Technology

Outstanding Young Volunteer *Dec 2021*
Hefei University of Technology

Outstanding Volunteer *Oct 2021*
The Yangtze Crossing Campaign Memorial

Technical Skills

Languages: Python, SQL (Oracle & SQL Server), Latex, JavaScript, HTML/CSS, C/C++, MATLAB, R

Developer Tools: VS Code, PyCharm, Git, Linux, IntelliJ IDEA

Libraries/Frameworks: PyTorch, TensorFlow, OpenCV, NumPy, Pandas, Vue.js

Languages

Mandarin *Native speaker*
Certificate of Putonghua Test, Band 2, Level 1, State Language Work Committee

English *Highly proficient*
IELTS: 6.5

Extra-curricular Activities

Volunteer Activities *Sep 2020 — Jun 2024*

- Campus anti-epidemic volunteer
  Responsible for delivering food, drinking water, and daily necessities for students.
- Volunteer teacher
  Provided teaching at Hefei Shushan Primary School and in communities in Binhu New Area
- Volunteer service in Anhui Provincial Library
  Shelved children's books; Provided children storytelling picture book lessons to expand their imagination.
- The Yangtze Crossing Campaign Memorial service volunteer

Minister of National Folk Art Association *Sep 2021 — Jun 2022*
Hefei University of Technology

Head of the publicity department of Zhaoyang Volunteer Service Association, Student Union *Sep 2021 — Jun 2022*
Department of Mathematics, Hefei University of Technology

Member of Hefei University of Technology Chinese orchestra *Sep 2021 — Jun 2024*
The principal first Erhu player, Hefei University of Technology