Jiayu Li

✉ jiayu320.li@connect.polyu.hk   🔗 https://jiayu320.github.io/

Education

Hong Kong Polytechnic University   *Sept 2024 – Present*
MS in Information Technology

- GPA: 3.6
- **Coursework:** Machine Learning and Data Analysis, Computer Vision and Image Processing, Natural Language Processing
- **Thesis:** Research on Privacy Preserving Collaborative AI (On going) [Proposal ↗](#)

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

- GPA: 86.39
- **Coursework:** Analytic Geometry, Discrete Mathematics, Numerical Analysis, Programming in C++, Programming in C
- **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.
- Studied algorithms related to natural language processing and natural language generation in search engines.

Front-end Developer Intern   *Jiangsu, China*
ZHENJIANG iSoftStone iGeek Home Information Technology Co., Ltd.   *May 2023*

- Developed a full stack web application from scratch, including back-end services, front-end interface, and database

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 Privacy preserving collaborative AI   *Jan 2025 – Present*
                                                                          Advisor: Prof. Wanyu Lin

- To build a collaborative framework for LLMs that can produce more faithful responses and corresponding confidence for reference, thereby enhancing the trustworthiness of LLMs. The core idea is to leverage the

collaboration model and best use the strong points and different decision-making behaviors of different LLMs or expert LMs to compensate for the biases of a single LLM.

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
Provincial level
Advisor: Prof. Qingshan Wang

- Preprocessed the micro-expression dataset, including the division of fixed points on human faces; amplified micro-expression by means of the Euler subtle motion amplification algorithm; completed application by using the latest Dataset CAS (ME)3 released by the Institute of Psychology, Chinese Academy of Sciences; Constructed long-term sparse deep flow algorithm by using depth information, which could be applied to identify micro-expression
- 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 Asso-   *Sep 2021 — Jun 2022*
ciation, Student Union
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