Shangai Li

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Education

Huazhong University of Science and Technology — Wuhan, China

B.M. in Basic Medicine; ***GPA: 86.6/100*** *(Rank: 7/25)* — *Sep 2021 – Jun 2026 (Expected)*

Minor Degree in Computer Science and Technology; ***GPA: 89.6/100*** — *Mar 2024 – Jun 2026 (Expected)*

- **Relevant Coursework:** Algorithmic Design & Analysis (91), Software Engineering (96), Discrete Mathematics (92), Principles of Databases (92), Computer Networks (95), Principles of Computer Organization (91), Data Structures, Object-Oriented Programming (C++) *etc.*

The University of Texas at Austin — Austin, TX, USA

Exchange Student; ***GPA: 4/4*** *(straight A's)* — *Jul 2024 - Aug 2024*

- **Relevant Coursework:** Python Programming, Data Analytics(R)

Awards & Achievements

CSC & Mitacs Undergraduate Research Internship Collaboration Scholarship: Selected as one of <200 students nationwide for a fully-funded research internship in Canada (2025)

The 7th Activity and Behavior Computing Challenge, 3rd Place: Secured 3rd Place in an international competition by developing a novel deep learning model for Parkinson's activity recognition. (2025)

Third Prize & Outstanding Teamwork Award: Awarded for leading a project investigating novel therapeutic responses in pancreatic cancer, presented at the university's flagship medical conference. (Mar 2024)

National High School Physics Competition, Provincial Second Prize: Secured Provincial Second Prize, placing 35th in the theoretical exam portion of the competition. (2020)

Provincial High School Chemistry Competition, First Prize: Achieved First Prize in the provincial-level competition within the Grade 10 cohort. (2019)

Academic, Research & Industrial Experience

Long Short-Term Memory Attention for Parkinson's Activity Recognition — Wilmington, NC, USA

First Author & Remote Research Intern — *Jan 2025 – Mar 2025*

- Conducted this research as part of the selective GEARS (Global Education, Academics, and Research Skills) Program at the University of North Carolina Wilmington.
- Engineered a DeepConvLSTM-Attention hybrid model, integrating CNN, LSTM, and attention mechanisms to significantly improve activity recognition accuracy.
- Culminated the internship by authoring and submitting a first-author paper to the ABC 2025 international conference, validating the model's superiority over existing methods.

AI-Driven Computational Study in Cancer Genomics — St. John's, NL, Canada

Mitacs Globalink Research Intern — *Jun 2025 – Aug 2025 (Expected)*

- Architected an end-to-end bioinformatics pipeline to resolve a data paradox in cancer genomics, using Kaplan-Meier survival analysis and DESeq2 to statistically define the core problem from TCGA patient data.
- Innovatively deployed the GeneFormer foundation model (a Transformer-based model pretrained on 30M+ cells) for zero-shot *in silico* perturbation, simulating a target gene knockout to generate a novel, testable hypothesis about its transcriptomic impact.

PBL-Guided Generation of Complete Medical Reasoning Paths — Wuhan, China

Undergraduate Thesis Researcher — *Jun 2025 – Oct 2025 (Expected)*

- Designed the 'MedPBL-Path' framework to address the limitations of linear reasoning in medical AI, mitigating LLM 'hallucination' by anchoring logic in a knowledge graph.
- Formalized Problem-Based Learning (PBL) principles into a constrained Breadth-First Search (BFS) algorithm on a knowledge graph, enabling the generation of 'differential diagnosis trees' that mimic expert clinical thinking.
- Developed a high-quality, 'complete' Chain-of- Thought (CoT) dataset designed to fine-tune LLMs for enhanced diagnostic accuracy and clinical decision-support value.

CXCR2-Mediated Response of Pancreatic Cancer Cells to IRE Treatment — Wuhan, China

Project Leader — *Feb 2023 – Mar 2024*

- Led a research team to investigate the molecular mechanisms of pancreatic cancer cell response to Irreversible Electroporation (IRE) therapy.
- Successfully secured funding and support from the Provincial College Students' Innovation and Entrepreneurship Program.
- Authored the project report and presented the findings, winning Third Prize and an Outstanding Teamwork Award at the 2024 Undergraduate Academic Conference.

Publications

Deep Convolutional Long Short-Term Memory Attention for Parkinson's Activity Recognition *2025*
***Shangai Li**, Demirhan Hilmi**
Int. J. Act. Behav. Comput., 2025(2), 1–18 [DOI]

Enhancing Healthcare Utilization and Reducing Preventable Hospitalizations: Exploring the Healthcare-Seeking Propensity of Patients with Non-Communicable Diseases in Rural China *2025*
*Yanqiu Hou, Wenyu Li, **Shangai Li**, Linxuan Chen, Jiayu An, Shan Lu**
BMC Public Health, 25(1), 323 [DOI]

Projects

MindSpark | *Online Platform*

- Led the development of an innovative LLM-driven learning platform, taking full ownership from architecture design and full-stack development (Vue 3 + Flask) to the final end-to-end deployment on a Kubernetes-based OS (Sealos). Key contributions include engineering a smart review algorithm, implementing JWT authentication, and integrating the DeepSeek LLM API via sophisticated prompt engineering to generate dynamic knowledge graphs.

Skills

Languages: Python (Proficient), R, C++ (Basic), English (IELTS 6.5)

Technologies: PyTorch, OpenCV, scikit-learn, Pandas, NumPy, Git, Flask, Kubernetes, Vue, MySQL,

Methodologies: Deep Learning, Machine Learning, Computer Vision, Medical Image Analysis, Computational Genomics, Medical Reasoning Path Generation, Knowledge Graph Design, Prompt Engineering

Research Interest

Focused on advancing artificial intelligence by developing novel computational methods to solve complex challenges, with a primary focus on driving new discoveries and improving outcomes in healthcare.