Xin Liang

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Education

Tongji University Shanghai, China

Bachelor of Engineering in Software Engineering, GPA: 90/100, IELTS: 7 *Sep. 2021 – July. 2025*

- **Main Courses:** Linear Algebra, Advanced Mathematics, Probability and Statistics, Discrete Maths, Advanced Language Programming Practice, Data Structure, Algorithm, Operating System, Principles of Database and Applications, Computer Organization, User Interface Interaction, Principles of Compilers, Computer Architecture, Introduction to Artificial Intelligence, Speech Recognition,Introduction to Computer Vision, Software Engineering

Hong Kong University of Science and Technology Hong Kong, China

Visiting Student, supervisor: Prof. Xiaojuan Ma *July 2023 – Aug. 2023*

Tongji University Shanghai, China

Freshman in Architecture and Urban Planning *Sep. 2020 – Sep. 2021*

- **Main Courses:** Introduction to Architecture, Field Trip of Art Modeling, Art Modeling, Introduction of Design, Fundamentals of Design, Foundations of digital design

Experience

Research Intern Jan. 2023 – Mar. 2024

MIT City Science Lab *REMOTE*

- Developed and deployed a custom token named SCRBT on Sepolia testnet, involving smart contract creation in Solidity, deployment using Truffle, and interaction/verification via MetaMask.
- Developed and optimized modular **smart contracts** using Solidity and deployed ABDK Libraries to enhance computational capabilities, overcoming the limitations of floating-point operations in Solidity.
- Conducted extensive research into Decentralized Application (DApp) development, using tools like Hardhat to streamline smart contract interactions with front-end and back-end systems, contributing to the lab's innovative block-chain solutions.
- Collaborated with a multidisciplinary team, staying updated with the latest blockchain trends, and contributed to publishing academic findings

Research Intern Sep. 2017 – Aug. 2020

NaMI-Tongji Lab *Shanghai, China*

- Prepared a patent for a pioneering differentiable neural architecture search method based on Zeroth-Order approximation, showcased in ICASSP 2023 Poster Session, demonstrating a significant contribution to the field of automated machine learning.
- Implemented an automatic machine learning method that notably reduced the time required to identify optimal neural network architectures, streamlining the development process and enhancing overall operational efficiency.
- Ensured the accuracy and reliability of the final neural architectures, validating the method's effectiveness in maintaining high performance standards while accelerating the architecture search process.

Projects

Multimodal AI Models for Medical Visual Question Answering | *Azure* Dec. 2023 – Current

- Development and Evaluation of Multimodal AI Models for Medical Visual Question Answering based on LLaVA-Med model.
- Utilized GPT-4 Vision to develop the LLaVA-Vision model, integrating multimodal information from images and text to understand and respond to queries based on medical imagery.
- Applied our trained models on three medical visual question answering datasets: SLAKE, VQA-RAD, and PathVQA, to generate accurate answers to posed questions.
- Implemented a comprehensive model performance evaluation system, calculating exact match scores, F1 scores, precision, recall, and accuracy on closed set.
- Conducted multimodal model evaluations by generating responses to medical visual question answering datasets with our models, using text generated by GPT-4 Vision as the ground truth for assessing model performance.
- Performed further evaluations with GPT-4 Vision on generated responses, comparing the performance of our models against GPT-4 Vision outputs to accurately quantify and understand differences between the models.

CLGAN-based Black-Box Adversarial Sample Generation Study | *Pytorch* Jan. 2024 – Current

- Contributed to a groundbreaking study on the susceptibility of Deep Neural Networks (DNNs) to adversarial attacks using the Critic-Leading Generative Adversarial Network (CLGAN).
- Assisted in developing the innovative CLGAN model with Python and PyTorch. Our findings demonstrated its ability to generate adversarial samples that can compromise black-box DNN models, outperforming existing methods in terms of evasion rate and efficiency.

ETH Beijing Hackathon 2023 | *Blockchain, Web Development* Apr. 2023 – Apr. 2023

- Developed FactLENS, a decentralized news validation ecosystem. This included a user-friendly browser plugin and a comprehensive website, featuring advanced functionalities like user-contributed ratings and consensus mechanisms for truth verification.
- Worked collaboratively in a team to design, prototype, and present the FactLENS project, demonstrating effective use of agile methodologies

JourneyCam | *SwiftUI, Unity* May 2023 – Sep. 2023

- Developed JourneyCam, a VR-Assisted Photography Teaching iOS App, which earned the Second Prize at the 2023 Mobile App Innovation Competition.
- Led a team through the design and development phases, ensuring a user-friendly interface and engaging experience. Utilized Swift and VR technologies to provide immersive, interactive photography tutorials, featuring customizable virtual scenarios and real-time feedback.

Honors & Awards

2023 Mobile App Innovation Competition Second Prize Sep. 2023
National Association for Computer Education in Colleges and Universities

Second Prize of Asia Pacific Cup Mathematical Modeling May 2023
APMCM Organizing Committee

Third Prize of Shanghai National University Student Mathematical Modeling Nov. 2022
Shanghai Municipal Education Commission

"Internet+" Innovation and Entrepreneurship Competition Bronze Award Sep. 2022
Tongji University

Publications

[1] Hejie Cui*, Lingjun Mao*, **Xin Liang**, Jieyu Zhang, Hui Ren, Quanzheng Li, Xiang Li, and Carl Yang.*These authors contributed equally to this work. *Biomedical Visual Instruction Tuning with Clinician Preference Alignment*. Submitted to NeurIPS 2024 Track Datasets and Benchmarks. 2024. URL: https://BioMed-VITAL.github.io.

[2] Hanfang Lyu, Yuanchen Bai, **Xin Liang**, Ujaan Das, Chuhan Shi, Leiliang Gong, Yingchi Li, Mingfei Sun, Ming Ge, and Xiaojuan Ma. "FARPLS: A Feature-Augmented Robot Trajectory Preference Labeling System to Assist Human Labelers' Preference Elicitation". In: *Proceedings of the 29th International Conference on Intelligent User Interfaces*. IUI '24. ACM, Mar. 2024. DOI: 10.1145/3640543.3645145. URL: http://dx.doi.org/10.1145/3640543.3645145.

[3] Long Bai, Guankun Wang, Jie Wang, Xiaoxiao Yang, Huxin Gao, **Xin Liang**, An Wang, Mobarakol Islam, and Hongliang Ren. *OSSAR: Towards Open-Set Surgical Activity Recognition in Robot-assisted Surgery*. IEEE, 2024. DOI: 10.48550/arXiv.2402.06985. arXiv: 2402.06985. URL: https://doi.org/10.48550/arXiv.2402.06985.

[4] Kejiang Qian, Lingjun Mao, **Xin Liang**, Yimin Ding, Jin Gao, Xinran Wei, Ziyi Guo, and Jiajie Li. *AI Agent as Urban Planner: Steering Stakeholder Dynamics in Urban Planning via Consensus-based Multi-Agent Reinforcement Learning*. 2023. arXiv: 2310.16772.

Technical Skills

Languages: Python, C/C++, SQL, JavaScript, HTML/CSS
Frameworks: React, Node.js, Flask, FastAPI, robosuite
Developer Tools: Git, Docker, Google Cloud Platform, VS Code, Visual Studio, PyCharm, Linux
Libraries: pandas, NumPy, Matplotlib