

# Gaoxuan Li (Gashon)

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Homepage: <https://glen909.github.io/>

Research Interests: Federated Learning, Affective Computing, Human-Computer Interaction, Distributed Systems, Ubiquitous Computing

## EDUCATION

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|---|-------------------------|
| <b>Monash University</b> <a href="#">QS Top100</a>  | Feb 2024 - Jul 2025     |
| Master of Data Science  | Bandar Sunway, Malaysia |
| <ul style="list-style-type: none"><li>GPA: <b>4.0/4.0</b> (Weighted Average Mark: <b>84.5/100</b>)</li><li>Major Courses: Statistical Data Modelling(83 HD), Foundations of Data Science(89 HD), Data Exploration and Visualisation(82 HD) and IT Research Methods(84 HD)</li></ul> |                         |
| <b>Hebei University of Science and Technology</b>   | Sep 2016 - Jun 2020     |
| Bachelor of Network Engineering in Polytechnic College  | Shi Jiazhuang, China    |
| <ul style="list-style-type: none"><li>Weighted Average Mark: 80/100</li><li>Honors/Awards: Four-Time Recipient of Provincial-Level Awards, Seven-Time Recipient of School-Level Awards, Outstanding Undergraduate Thesis and Two-time Outstanding Team Leader</li></ul>             |                         |

## RESEARCH EXPERIENCE

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|--|---------------------|
| <b>Emotion State Classification Enhanced by Integrating Multimodal Federated Learning and Differential Privacy(on-going)</b>   | Jul 2024 - Present  |
| <ul style="list-style-type: none"><li>Supervisors: Dr <a href="#">Lim Chern Hong</a></li><li>Objectives:<ul style="list-style-type: none"><li>Integrate data from various physiological sensors (EEG, ECG, EDA, HR, BVP, RESP) to enhance emotion recognition.</li><li>Ensure data privacy using FL by keeping data on local devices and sharing only model updates.</li><li>Implement HDP to add controlled noise to model updates, balancing privacy and accuracy.</li></ul></li><li>Key Activities:<ul style="list-style-type: none"><li>Researching and developing the multimodal FL framework.</li><li>Implementing HDP mechanisms to mitigate privacy leakage risks.</li><li>Conducting extensive experiments to evaluate framework effectiveness in accuracy, precision, recall, F1-score, privacy guarantees, and computational efficiency.</li><li>Analyzing results to ensure the effectiveness and efficiency of the proposed framework.</li></ul></li><li>Expected Contributions:<ul style="list-style-type: none"><li>A robust emotion recognition model that improves accuracy while ensuring data privacy.</li><li>A secure, accurate, and practical solution for applications like healthcare monitoring and personalized wellness programs.</li><li>Advancement in the field of privacy-preserving machine learning and emotion recognition technologies.</li></ul></li></ul> |                     |
| <b>FedBChain: A Blockchain-enabled Federated Learning Framework for Improving DeepConvLSTM with Comparative Strategy Insights</b>  | Nov 2023 - Apr 2024 |
| <ul style="list-style-type: none"><li>First Author (Accepted by <b>IEEE SMC 2024</b>)</li><li>Achievements:<ul style="list-style-type: none"><li>Achieved significant improvements in Precision, Recall, and F1-score (4%+ on average) across three real-world datasets.</li><li>Demonstrated enhancements using five federated learning strategies: FedAvg, FedProx, FedTrimmedAvg, Krum, and FedAvgM.</li></ul></li><li>Responsibilities:<ul style="list-style-type: none"><li>Conducted extensive research on reducing LSTM layers for enhanced prediction performance.</li><li>Designed and implemented the FedBChain framework.</li><li>Performed comparative tests with different hidden layer units (128, 256, 512) and federated learning strategies.</li></ul></li></ul>  |                     |

- Analyzed and validated results, ensuring improvements in performance metrics.
- Ensured data security and privacy during distributed training processes.

## Intelligent Navigation System Based on ResNet50-LSTM Combined Model

Jan 2020 - Jun 2020

- Bachelor's Thesis Project (94/100)
- [On-site Testing Video](#)
- System Composition: The system consists of four parts: visually impaired user terminal, supervisor terminal, data cloud storage, and image cloud processing.
- Visually Impaired User Terminal: Uses Raspberry Pi 3B+ as the central processor, running a Linux system, equipped with modules for image collection, GPS positioning, ultrasonic distance measurement, voice broadcasting, and remote voice assistance.
- Supervisor Terminal: A WeChat mini-program displaying data including images and corresponding text descriptions, along with distance data of obstacles, also offering remote voice assistance.
- Data Cloud Storage: Uses China Mobile OneNET platform for storing and forwarding system data.
- Image Cloud Processing: Utilizes Flask framework-based web server to generate text descriptions via neural network models, which are then sent back to the user terminal.

## WORKING EXPERIENCE

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### Youxuan Department, Meituan (Fortune Top 500)

Jul 2022 - Dec 2022

Test Development Engineer (Full-time)

Beijing, China

- Responsible for testing and maintaining the vegetable market module.
- Developed and implemented automated testing frameworks to ensure the quality and functionality of the vegetable market module.
- Conducted regular performance evaluations and troubleshooting to identify and resolve issues promptly.
- Collaborated with cross-functional teams to enhance system efficiency and user experience.
- Provided documentation and training to team members on automation tools and processes.

### Youxuan Department, Meituan (Fortune Top 500)

Jun 2021 - Sep 2021

Test Development Engineer (Part-time)

Beijing, China

- Managed testing and maintenance of the logistics module for Meituan Youxuan.
- Developed and maintained automated test cases for the logistics module.
- Participated in the research and development of algorithms for automatic generation of system-level test cases.
- Conducted performance evaluations and debugging to ensure optimal system operation.
- Collaborated with various teams to improve automation processes and system efficiency.
- Received an internship performance rating of A (S/A/B/C).

## MISCELLANEOUS

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- **Skills:** Python, Java(Working Language), SQL, Tableau, RShiny, Linux
- **Languages:** Chinese (Native), English (Fluent)
- **Interests:** Ping Pong & Aerobic Exercise & Climbing