Xiang Liao

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Education

University of California, Irvine	2024/09 - 2026/06	
Master of Science in Software Engineering	Irvine, California, USA	
Courses: Softrware Engineering, Software Accessibility, Software Architecture		
Huazhong University of Science and Technology(HUST)	2019/09 - 2023/06	
B. Eng in Computer Science and Technology	Wuhan, China	
GPA 3.69/4.0, Outstanding Graduate (top 3%)		
• Courses: Software Engineering, Operating System, Compiler Principles, Computer Telecommunication & Network, Com-		
puter Organization, Database System, Computer Architecture		
University of Melbourne	2020/01 - 2020/01	
Artificial Intelligence Winter Seminar, Certificate	Melbourne, Australia	
Mentored by: <u>Prof. Rui Zhang</u>		

Work Experience

<u>TP-LINK</u>	2023/07 - 2024/07
Software Development Engineer in Test	Shenzhen, China

- Conducted functional and regression testing using Python, identifying and reporting 95% of defects within SLA. Automated 75% of test cases, improving testing efficiency by 30%.
- Developed a server using Go, handling HTTP, UDP and TCP protocols, to manage 100+ connected devices, enhancing network management and visibility by 60%.
- **Streamlined testing process** by integrating a **testing manager system**, reducing test execution time by **40**%. Ensured seamless platform integration with proprietary data format, enabling **300+ users** to access real-time test results.

ByteDance

Software Development Engineer in Test Intern

- Developed and refined cross-platform testing tools using Python for Mac and Windows systems, enabling the evauluation of **10+ key functionalities** in Feishu, including file downloads and meeting management, increasing test coverage by **35**%.
- Designed and implemented an internal web-based platform with React(frontend) and Java(backend), enabling 20+ team members to upload and analyze test reports. Automated test documentation generation reduced manual reporting time by 60%, enhancing team productivity.

Projects

wdapy [<u>Code</u>]

2021/07 - 2021/11

2022/02 - 2022/05

Shanghai, China

A Python library that extends the capabilities of the popular facebook-wda library for iOS automation testing.

- Implemented multi-version WebDriverAgent support in wdapy, ensuring compatibility with 5+ iOS platform versions, expanding its usability for automation testing.
- **Integrated autocomplete functionality** across all functions, enhancing developer experience by providing instant access to documentation and parameters.
- Optimized function input handling using enumerations, resulting in 30% fewer errors and clearer, maintainable code.

HustHole [Website]

2021/05 - 2021/10

An iOS app that provides an anonymous community for students in HUST; downloadable in the App Store.

- Added markdown support for user posts and comments, improving formatting flexibility and boosting user engagement by 20%.
- Designed a secure password reset system, reducing login issues by 35%, ensuring a seamless user experience.
- Proactively maintained the app, resolving 50+ reported bugs, and optimizing performance for better reliability.

LipReading [Website]

A Chinese website designed for individuals with speech impairments to learn lip reading.

- **Developed a video-based learning feature**, enabling users to match lip shapes with specific words and record videos for backend recognition, improving pronunciation accuracy by **25**%.
- Built the frontend using React + CSS and the backend with Go, delivering a responsive and scalable platform for users.
- **Optimized backend recognition algorithms**, ensuring a real-time self-comparison experience for speech-impaired learners.

Research Experience

Software Aurora Lab at University of California ,Irvine Research Assistant

Advisor: Prof. Joshua Garcia

- **Developed** <u>**DoppleTest**</u>, an innovative test generation approach that identified **123 bug-revealing violations** in Autonomous Driving Systems, improving safety testing standards.
- Extracted critical data (e.g., junctions and traffic signals) from **protobuf files** in the HD Map module of Baidu Apollo, ensuring accurate test simulations.
- Automated testing analysis using Python scripts, providing detailed insights into test results and calculating pedestrians' positions in real time, improving analysis efficiency by 25%.
- Categorized collision types into 8 distinct bug categories, streamlining issue prioritization for autonomous driving software developers.

DP Innovation Works at HUST

Research Assistant

Advisor: **Prof. Ran Wang**

- **Designed a lip-reading recognition algorithm** using **3DDFA-V2 technology**, achieving precise lip region detection through 3D facial landmark extraction and alignment.
- Enhanced feature extraction by integrating 3D CNN and ResNet, capturing both motion and appearance features, boosting neural network accuracy by 14.1% over state-of-the-art benchmarks.
- Achieved a 35.7% Word Error Rate (WER) on the LRS2-BBC dataset, a significant improvement over the existing methods, advancing speech recognition capabilities.
- **Optimized processing time to 4.6 milliseconds** for recognizing text from 100 video frames, ensuring real-time usability while maintaining high accuracy.

Publications

Huai, Yuqi, Yuntianyi Chen, Sumaya Almanee, Tuan Ngo, Xiang Liao, Ziwen Wan, Qi Alfred Chen, and Joshua Garcia.
"Doppelgänger Test Generation for Revealing Bugs in Autonomous Driving Software." In 2023 IEEE/ACM 45th International Conference on Software Engineering (ICSE), pp. 2591-2603. IEEE, 2023. [Paper][Code]

Skills and Languages

Programming Skills: Python, Go, JavaScript, Java, React **Technical Skills**: Software Testing, Automated Testing, Web Development, Linux, Computer Network **Language**: English (Fluent), Chinese (Native)

2022/05 – Present Irvine, USA

2020/12 – 2023/05 Wuhan, China