

# YIFAN LIAO

Research Interests: Software & ADS testing

 personal web  lyf1998118@gmail.com  
 +86 17754927977  github  
 Chongqing, China  LinkedIn

## BIO

I'm a research assistant at NUS Research Institute in Chongqing, where I am supervised by Prof. Zhiyong Huang. I obtained my M.Comp. in Artificial Intelligence at National University of Singapore (NUS). Before joining NUS, I received my B.Eng. in Mechanical Engineering at Chongqing University (CQU) in 2021.

## SKILLS

**Languages:** Python, JavaScript, Java, HTML.

**Technologies:** Linux, Docker, Kubernetes.

## PROJECTS AND PUBLICATIONS

**Web Testing**  
Role: Leader

### Detecting and Explaining Anomalies Caused by Web Tamper Attacks

ASE'24(CCF-A)

This project aims to detect and explain attack-induced anomalies in web applications by learning normal behavioral during runtime. We model the normal constraints with first-order logic, and generate executable Python scripts. By leveraging LLMs in the learning process, this approach enhances both the detection and explanation of anomalies.

**ADS Testing**  
Role: Leader

### Boost the Fuzzers of ADS through Explanation-driven and Diversity-enhancing

Project Webpage

This project addresses the need for a diversity-driven and explanation-oriented solution by introducing DivX, which enhances existing ADS fuzzers. It achieves this by discovering diversified failures across different driving scenarios and deriving actionable explanations. These explanations help summarize failure patterns, generate test cases, and provide runtime remedies to avoid potential accidents.

**Robotics**  
Role: Participants

### The Path Planning of Mobile Robot by Neural Networks and Hierarchical Reinforcement Learning (Leader: Dr. Jinglun Yu)

Front. Neurorobot. Vol 14, 2020

This project aims to create a reliable outdoor autonomous mobile robot with functions for planning trajectories and avoiding obstacles in real-time.

## EDUCATION

9/2021 - 6/2023	<b>Master, National University of Singapore (Supervisor: Prof. JS Dong)</b> Thesis: Boost the Fuzzers of ADS through Explanation-driven and Diversity-enhancing GPA: 3.5/5	Artificial Intelligence
6/2020 - 6/2021	<b>Visiting student, University of Cincinnati (Remote-visiting because COVID-19)</b> GPA: 3.67/4	Mechanical Engineer
9/2016 - 6/2021	<b>Bachelor, Chongqing University</b> GPA: 3.38/4	Mechanical Engineer

## EXPERIENCE

06/2024 - now	<b>Research Assistant (P.I: Dr. Zhiyong Huang)</b> • Lead the ADS testing project, perturb different signs to test ADS's perception module. ADS testing	NUS Research Institute in Chongqing
6/2023 - 6/2024	<b>Research Assistant (P.I: Prof. Yang Liu)</b> • Lead a web testing project, developing a comprehensive end-to-end web tamper detection toolset. • Assisted in a system log detection project by building the evaluation platform through investigating and running log detection algorithms (DeepLog, LogAnomaly, Logrobust, etc.) and several CVE PoCs. Web testing / Log Detection	NCS Group (Singtel's Subsidiary)
12/2019 - 6/2020	<b>Robotics Intern</b> • Apply the extended Kalman filter to obtain accurate sensor data for robot navigation Robotics / Matlab	Chongqing Kaibao Robotic Company

## SERVICES

PRDC 2023 (Chair: Prof. JS Dong) - Program Committee

## LANGUAGES

English - Fluent, Chinese - Native