YICHENG LIU

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Home GitHub

Summary

- **Research Interests:** My currently research primarily lies in **operating system** and **container security**. My aim is to build a secure system that can effectively defend against malicious attackers and guarantee **confidentiality, integrity, and availability (CIA)**.
- **Highlight:** 3 years of programing experience; 2 years of research experience with solid mathematical and theoretical background; 1 year of experience with system related research area.
- **Relevant Courses:** Introduction to Computer System, Computer System Engineering, Operating System

Education

Shanghai Jiao Tong University 09/2020 – present
Undergraduate of Engineering, major in Automation (Sensor) Shanghai, China
- GPA in the past 3 years：90.45/100（rank 1/61）

Relevant Experience

Shanghai Jiao Tong University

Research Assistant in Institution of Parallel And Distributed Systems (IPADS), advised by Jinyu Gu

Research Topic: Operating System Security, Container Security, Autopilot System

- Development of an autopilot system based on the micro kernel operating system.
- Development of various sanitizers in the micro kernel operating system, including KASAN, KMSAN, and KCSAN, to enhance system security and stability.
- Engagement in container security research, entailing the design of container security strategies as well as investigation and replication of Common Vulnerabilities and Exposures (CVEs) to verify security measures.
- Research in container security, constructing a secure container system equipped with the ability to defend against some availability related attacks .

Shanghai Jiao Tong University

Research Assistant in John Hopcroft Center, advised by Guanjie Zheng

Research Topic: Traffic Signal Control, Reinforcement Learning, Traffic Forecasting Model

- Development of a comprehensive traffic simulation system capable of processing large volumes of data and simulating traffic flow at scale. This involved integrating data pre-processing capabilities into the system to ensure accurate results.
- Investigation in offline reinforcement learning algorithms for traffic signal control (TSC), which involved investigating and developing new approaches to enhance the efficiency and effectiveness of TSC. As a result, there is two papers in proceeding.
- Research in a general proposed large traffic flow model, which involved constructing and training a large traffic flow forecasting model and prompting the model into different traffic signal control related tasks.

Shanghai Jiao Tong University

PRP participant in Intelligent Computer Architecture Technology, advised by Zefang Yu

Research Topic: Computer Version, Automatic Dataset Collection

- Development of the automatic image dataset collecting method using GTA engine.
- Development of a Human Pose Estimation (HPE) training system that leverage the automatically collected image dataset.

Publications

Conference

Synpose : Large-Scale and Densely Annotated Synthetic Dataset for Human Pose Estimation in Classroom
Zefang Yu; YangCheng Li; **Yicheng Liu**; Ting Liu; Yuzhuo Fu
ICASSP, 2022. [Paper]

arXiv

CBLab : Scalable Traffic Simulation with Enriched Data Supporting
Chumeng Liang; Zherui Huang; **Yicheng Liu**; Zhanyu Liu; Guanjie Zheng; Hanyuan Shi; Yuhao Du; Fuliang Li; Zhenhui Li
[Paper]

And two papers in proceeding…

Reviewer Services

- 2023 **Reviewer** Knowledge Discovery and Data Mining (KDD)
- 2023 **Reviewer** International Conference on Machine Learning (ICML)
- 2023 **Reviewer** International Joint Conferences on Artificial Intelligence (IJCAI)

Honors (selected)

- 2021-2022 **National Scholarship**, Top performance students in China
- 2021-2022 **The First Prize Scholarship**, Top 1 student of the department in SJTU
- 2021-2022 **Merit Student**, Top performance students in SJTU

Project Portfolio (selected)

Mini Basic

Developer [Code]

A Basic Interpreter. Input basic language code in the left column and the result will be shown in the right one. Currently it **supports PRINT, GOTO, IF ELSE, and mathematical expression**.

Parabox in Shell

Founder & Developer [Code]

Inspired by the game Parabox and here is **the cli version of Parabox**, which contains most of the functions of the origin Parabox. Different maps and starting UI are to be finished in the future. Using w, a, s, d to control player (P). There are many different kinds of blocks with different interactions.