

Zhuohua Li | Curriculum Vitae

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EDUCATION

The Chinese University of Hong Kong

Ph.D. in Computer Science and Engineering

Advanced Networking and System Research Laboratory (ANSRLab)

Supervised by Prof. John C.S. Lui

Hong Kong

Aug.2017–Oct.2022

University of Science and Technology of China

B.E. in Computer Science and Technology

Hua Xia Talent Program in Computer Science and Technology

Hefei

Aug.2013–Jun.2017

EXPERIENCE

Postdoctoral Fellow at The Chinese University of Hong Kong

Supervisor: Prof. John C.S. Lui

○ Working on online learning and multi-armed bandits algorithms and their applications

Hong Kong

Aug.2023–Present

Junior Research Assistant at The Chinese University of Hong Kong

Supervisor: Prof. John C.S. Lui

○ Designing Border Gateway Protocols (BGP) for quantum networks

○ Leveraging online learning algorithms to select high-fidelity paths while minimizing the testing cost

Hong Kong

Oct.2022–Aug.2023

Secure Linux Kernel Module Development in Rust

Supervisor: Dr. Tao (Lenx) Wei

○ Developed a framework for writing Linux kernel modules in the Rust programming language

○ Provided infrastructures for safe kernel memory allocation and concurrency management

Baidu X-Lab, USA

Jul.2018–Oct.2018

Sentiment Analysis of Microsoft's Chatbot XiaoIce

Social Computing Group, Mentor: Dr. Xing Xie

○ Participated in improving the sentiment recognition of XiaoIce, Microsoft's AI chatbot

○ Optimized the emotion recognition according to the context of XiaoIce's dialogues

Microsoft Research Asia, Beijing

Jul.2016–Sep.2016

2016 ISC-HPCAC Student Cluster Competition

Advisor: Prof. Hong An

○ Built an HPC cluster with our team based on *Huawei FusionServer X6800*

○ Optimized the performance of several benchmarks and applications within 3kW power-dissipation

○ Ranked 4th in overall score and 1st in *WRF (Weather Research and Forecasting Model)*

Frankfurt, Germany




Jun.2016

PUBLICATIONS (* means equal contribution, # means corresponding author)

- Maoli Liu, **Zhuohua Li**[#], Xuchuang Wang, and John C.S. Lui. LINKSELfIE: Link Selection and Fidelity Estimation in Quantum Networks. In *Proceedings of the IEEE Conference on Computer Communications 2024. INFOCOM '24*.
- Maoli Liu^{*}, **Zhuohua Li**^{*#}, Kechao Cai, Jonathan Allcock, Shengyu Zhang, and John C.S. Lui. Quantum BGP with Online Path Selection via Network Benchmarking. In *Proceedings of the IEEE Conference on Computer Communications 2024. INFOCOM '24*.
- Jincheng Wang, **Zhuohua Li**, Mingshen Sun, Bin Yuan[#], and John C.S. Lui. IoT Anomaly Detection Via Device Interaction Graph. In *Proceedings of the 53rd Annual IEEE/IFIP International Conference on Dependable Systems and Network. DSN '23*.
- **Zhuohua Li**, Jincheng Wang, Mingshen Sun, and John C.S. Lui. Detecting Cross-Language Memory Management Issues in Rust. In *Proceedings of the 27th European Symposium on Research in Computer Security. ESORICS '22*.

- Jincheng Wang, **Zhuohua Li**, John C.S. Lui, and Mingshen Sun. Zigbee’s Network Rejoin Procedure for IoT Systems: Vulnerabilities and Implications. In *Proceedings of the 25th International Symposium on Research in Attacks, Intrusions and Defenses*. RAID ’22.
- Jincheng Wang, **Zhuohua Li**, John C.S. Lui, and Mingshen Sun. Topology-Theoretic Approach To Address Attribute Linkage Attacks In Differential Privacy. *Computers & Security*, Volume 113, February 2022.
- **Zhuohua Li**, Jincheng Wang, Mingshen Sun, and John C.S. Lui. MIRCHECKER: Detecting Bugs in Rust Programs via Static Analysis. In *Proceedings of the 28th ACM Conference on Computer and Communications Security*. CCS ’21.
- Jincheng Wang, **Zhuohua Li**, John C.S. Lui, and Mingshen Sun. Topology-Theoretic Approach To Address Attribute Linkage Attacks In Differential Privacy. In *Proceedings of IEEE INFOCOM WKSHPs: BigSecurity 2021: International Workshop on Security and Privacy in Big Data*. BigSecurity ’21.
- **Zhuohua Li**, Jincheng Wang, Mingshen Sun, and John C.S. Lui. Securing the Device Drivers of Your Embedded Systems: Framework and Prototype. In *Proceedings of the 3rd International Workshop on Security and Forensics of IoT (in conjunction with ARES 2019)*. IoT-SECFOR ’19.

SELECTED PROJECTS

- FFICHECKER** (☆36): A Tool for Detecting Cross-Language Memory Management Issues in Rust 
 - Detected memory management issues across Rust’s *Foreign Function Interface (FFI)*
 - Detected 34 real-world bugs
- MIRCHECKER** (☆114): A Static Analysis and Bug Detection Tool for Rust programs 
 - Performed static analysis on the Rust’s *Mid-level Intermediate Representation (MIR)* based on the theory of *Abstract Interpretation*
 - Detected 33 real-world runtime panics and memory safety bugs
- linux-kernel-module-rust** (☆632): A Framework for Secure Kernel Module Development in Rust 
 - A framework for writing Linux kernel modules in the Rust programming language
 - Provided infrastructures for safe kernel memory allocation and concurrency management

PROFESSIONAL SERVICE

Reviewer: IEEE/ACM Transactions on Networking, IEEE Transactions on Software Engineering

TEACHING ASSISTANT

CMSC5735: Advanced Topics in Cloud Computing	Spring 2018, CUHK
CSCI3320: Fundamentals of Machine Learning	Spring 2018, CUHK
CSCI2040: Introduction to Python	Fall 2017, CUHK

HONORS & AWARDS

Talent Class Top-Tier Scholarship Plan, Category A (10%) for three times	2014–2016, USTC
Second-class Scholarship for Outstanding Student (10%) for two times	2015, 2016, USTC
Third-class Scholarship for Outstanding Student (15%) for two times	2013, 2014, USTC
Excellent Student Cadre (3%)	2015, USTC

COMPUTER SKILLS

Operating Systems: Gentoo Linux, macOS

Programming Languages: Experienced in C/C++, Rust, Python