

# Changhua Luo

## Address:

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## Education

### The Chinese University of Hong Kong

Aug 2020 – Jun 2024

Doctor of Philosophy, Computer Science and Engineering  
Advisor: Professor Wei Meng

### Wuhan University

Sept 2015 – Jul 2019

Bachelor of Engineering, Information Security

## Professional Experience

### Tenure-track Assistant Professor

Wuhan University

Jan 2025 –

### Postdoctoral Researcher

The University of Hong Kong

Jul 2024 – now

Advisor: Professor Chenxiong Qian

### Visiting Scholar

Tsinghua University

Jun 2023 – Sept 2023

Host: Professor Chao Zhang

### Research Assistant

The Chinese University of Hong Kong

Feb 2020 – Jul 2020

Advisor: Professor Wei Meng

## Research Interests and Impacts

My research interests primarily include program analysis, software security, and web security. Recently, I mainly worked on developing techniques for automatically detecting, exploiting, and patching vulnerabilities in software (C/C++ and web applications). My works have discovered and fixed numerous (>100) security vulnerabilities in complicated software programs such as OpenSSL and Redis.

## Publication

I have published six research papers, including four first-author papers, at top-tier conferences in computer security (Oakland, CCS) and software engineering (ICSE).

- [1] **Automatic Library Fuzzing through API Relation Evolvment**  
 Jiayin Lin, Qingyu Zhang, Junzhe Li, Chenxin Sun, Changhua Luo\*, Hao Zhou, and Chenxiong Qian\*  
 Under review, NDSS round 2.
- [2] **Predator: Efficient Dynamic Validation for Web Application Vulnerabilities**  
 Chenlin Wang, Wei Meng, Changhua Luo, and Penghui Li  
 Under review, Oakland round 2.
- [3] **IDFuzz: Intelligent Directed Grey-box Fuzzing**  
 Yiyang Chen, Wenyu Zhu, Changhua Luo, Chao Zhang, Wang Long, and Bingkai Su  
 Under review.
- [4] **Augmenting PoC Exploit Generation for Node.js Applications Using Test Suites**  
Changhua Luo, Penghui Li, Wei Meng, and Chao Zhang  
 In Proceedings of the 31st ACM Conference on Computer and Communications Security (CCS). November 2024.
- [5] **Holistic Concolic Execution for Dynamic Web Applications via Symbolic Interpreter Analysis**  
 Penghui Li, Wei Meng, Mingxue Zhang, Chenlin Wang, and Changhua Luo  
 In Proceedings of the 45th IEEE Symposium on Security and Privacy (Oakland). May 2024.
- [6] **Strengthening Supply Chain Security with Fine-grained Safe Patch Identification**  
Changhua Luo, Wei Meng, and Shuai Wang  
 In Proceedings of the 46th International Conference on Software Engineering (ICSE). April 2024.
- [7] **SelectFuzz: Efficient Directed Fuzzing with Selective Path Exploration**  
Changhua Luo, Wei Meng, and Penghui Li  
 In Proceedings of the 44th IEEE Symposium on Security and Privacy (Oakland). May 2023.
- [8] **TChecker: Precise Static Inter-Procedural Analysis for Detecting Taint-Style Vulnerabilities in PHP Applications**  
Changhua Luo, Penghui Li, and Wei Meng  
 In Proceedings of the 29th ACM Conference on Computer and Communications Security (CCS). November 2022.  
 ☆ ACM CCS 2022 Best Paper Honorable Mention, 20/971=2.06%.
- [9] **On the Feasibility of Automated Built-in Function Modeling for PHP Symbolic Execution**  
 Penghui Li, Wei Meng, Kangjie Lu, and Changhua Luo  
 In Proceedings of the 30th Web Conference (WWW). April 2021.

## Awards and Honors

|  |                     |
|--|---------------------|
| ACM CCS 2022 Best Paper Honorable Mention                              | Nov 2022            |
| CUHK Postgraduate Student Scholarship                                  | Aug 2020 – Jun 2024 |
| Championship in Information Security Triathlon, Central China Division | Jun 2017            |
| Second Prize in the National College Student Mathematics Competition   | 2016                |
| Merit Student in Wuhan University                                      | 2015 – 2018         |

## Professional Services

### Technical Program Committee

|  |      |
|--|------|
| IEEE International Conference on Parallel and Distributed Systems (ICPADS) | 2024 |
|--|------|

### External Reviewer

|   |                   |
|---|-------------------|
| IEEE Symposium on Security and Privacy (Oakland)                          | 2023 – 2024       |
| The ACM Conference on Computer and Communications Security (CCS)          | 2021 – 2024       |
| The Web Conference (WWW)  | 2020 – 2022, 2024 |
| The ACM ASIA Conference on Computer and Communications Security (ASIACCS) | 2021 – 2022       |

## Teaching Experience

### Teaching Assistant at CUHK

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| Introduction to Cyber Security           | Spring 2022, Spring 2023 |
| Computer and Network Security            | Fall 2021                |
| Computer Principles and Java Programming | Spring 2021              |
| Introduction to Computing Using Java     | Fall 2020                |

## Miscellaneous

### Open-Source Software

#### SelectFuzz

An efficient directed fuzzer using selective path exploration

<https://github.com/cuhk-seclab/SelectFuzz>

#### TChecker

A precise static analysis tool for detecting taint style vulnerabilities in PHP applications

<https://github.com/cuhk-seclab/TChecker>

#### SPatch

A tool that helps update outdated third-party code in C/C++ software.

<https://github.com/cuhk-seclab/SPatch>