

Changming Liu

Software Engineer, Google, Sunnyvale, CA

Contact Information

Google Scholar: <https://scholar.google.com/citations?user=DBc2YBoAAAAJ>

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Education

Northeastern University

PhD of Cybersecurity in Khoury College of Computer Science

Advised by Prof Engin Kirda

Boston, USA

Sept 2019 - Oct 2024

Huazhong University of Sci & Tech

M.Eng of Computer Architecture in School of Computer Sci & Tech

Advised by Prof Hai Jin

Wuhan, China

Sept 2016 - June 2019

Huazhong University of Sci & Tech

B.Eng of Information Security in School of Computer Sci & Tech

Advised by Prof Deqing Zou

Wuhan, China

Sept 2012 - June 2016

Publications

- Changming Liu, Alejandro Mera, Engin Kirda, Meng Xu, Long Lu. **CO3: Concolic Co-execution for Firmware**. To appear in the 33rd USENIX Security Symposium (USENIX Security 24).
- Alejandro Mera, Changming Liu, Ruimin Sun, Engin Kirda, Long Lu **SHiFT: Semi-hosted Fuzz Testing for Embedded Applications**. To appear in the 33rd USENIX Security Symposium (USENIX Security 24).
- Bo Feng, Meng Luo, Changming Liu, Long Lu and Engin Kirda, **AIM: Automatic Interrupt Modeling for Dynamic Firmware Analysis** in IEEE Transactions on Dependable and Secure Computing, doi: 10.1109/TDSC.2023.3339569.
- Zhichuang Sun, Runmin Sun, Changming Liu, Chowdhury Amrita Roy, Somesh Jha and Long Lu. 2023. **ShadowNet: A Secure and Efficient System for On-device Model Inference** in 2023 IEEE Symposium on Security and Privacy (SP), San Francisco, CA, USA, 2023 pp. 1596-1612.
- Changming Liu, Xiaojing Ma, Sixing Cao, Jiayun Fu, and Bin B. Zhu. 2022. **Privacy-preserving Motion Detection for HEVC-compressed Surveillance Video**. ACM Trans. Multimedia Comput. Commun. Appl. 18, 1, Article 23 (January 2022), 27 pages.
- Changming Liu, Yaohui Chen, and Long Lu. 2021. **KUBO: Precise and Scalable Detection of User-triggerable Undefined Behavior Bugs in OS Kernel**. In Proceedings of the 28th Network and Distributed System Security Symposium (NDSS 2021), Virtual Conference, 21st February - 25th February 2021.
- Peng Luo, Deqing Zou, Yajuan Du, Hai Jin, Changming Liu, and Jinan Shen. 2020. **Static detection of real-world buffer overflow induced by loop**. Computers & Security, Volume 89, 2020, 101616, ISSN 0167-4048.
- Changming Liu, Deqing Zou, Peng Luo, Bin B. Zhu, and Hai Jin. 2018. **A Heuristic Framework to Detect Concurrency Vulnerabilities**. In Proceedings of the 34th Annual Computer Security Applications Conference (ACSAC '18). Association for Computing Machinery, New York, NY, USA, 529-541

- Xiaojing Ma, Changming Liu, Sixing Cao, and Bin B. Zhu. 2018. **JPEG Decompression in the Homomorphic Encryption Domain**. In Proceedings of the 26th ACM international conference on Multimedia (MM '18). Association for Computing Machinery, New York, NY, USA, 905–913.
- Liu Changming, Fu Cai, Xu Deliang, Sun Lin, Han Lansheng. 2015. **An Energy-Balanced WSN Algorithm Based on Active Hibernation and Data Recovery**. In Proceedings of Algorithms and Architectures for Parallel Processing. ICA3PP 2015. Lecture Notes in Computer Science, vol 9528. Springer, Cham.

Experience

Software Engineer

Dec 2024 - Now

Accelerator Security, Google Cloud, Sunnyvale, CA, USA

Research Intern

May 2021 - Aug 2021

T.J. Watson Research Center, IBM Information Security Research, Yorktown Heights, NY, USA

- Building infrastructure for cloud services to automatically infer the microservices' identities and establish trust.

Research Intern

Sept 2017 - March 2018, Sept 2018 - March 2019

Software analytics group, Microsoft Research Asia, Beijing, China

- Designing and implementing fuzz testing algorithm to detect concurrency bugs.
- Integrating deep-learning-based object detection framework into outlook's anti-phishing system.

Research Assistant

July 2015 - Sept 2015

Computer Science Department, University of Hong Kong, Hong Kong SAR, China

- Research paper reading and implementation about privacy-preserving genome applications.

Honors & Awards

Excellent Intern Award(Top 20%)

Microsoft Research Asia, 2019

National Scholarship

Ministry of Education of China, 2018

Excellent Intern Award(Top 20%)

Microsoft Research Asia, 2018

Graduate with honor

Huazhong University of Sci & Tech, 2016

Merit Student

Huazhong University of Sci & Tech, 2015

National Scholarship

Ministry of Education of China, 2015

Misc

Reviewership: Journal of Systems Architecture; NDSS 2021 (External); CCS 2021 (External)

Programming: C/C++;Python;

Hobbies: Badminton and violin.

Bug Hunt: Find 14 new undefined behaviors bugs in the Linux kernel that are either acknowledged or patched.