Changming Liu

PhD Candidate, Northeastern University, Boston, MA

Contact Information

Google Scholar: https://scholar.google.com/citations?user=DBc2YBoAAAAJ   **Phone:** +1-617-637-6223
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Education

Northeastern University   Boston, USA
PhD student of Cybersecurity in Khoury College of Computer Science   Sept 2019 - Now
Advised by Prof Long Lu and Prof Engin Kirda

Huazhong University of Sci & Tech   Wuhan, China
M.Eng student of Computer Architecture in School of Computer Sci & Tech   Sept 2016 - June 2019
Advised by Prof Hai Jin

Huazhong University of Sci & Tech   Wuhan, China
B.Eng student of Information Security in School of Computer Sci & Tech   Sept 2012 - June 2016
Advised by Prof Deqing Zou

Publications

- Zhichuang Sun, Runmin Sun, Changming Liu, Chowdhury Amrita Roy, Somesh Jha. 2022. **ShadowNet: A Secure and Efficient System for On-device Model Inference**. Oakland 2023 to appear, https://arxiv.org/abs/2011.05905.

- 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.

Under submission

- <u>Changming Liu</u>, Alejandro Mera, Engin Kirda, Long Lu. **SPEAR: On-device Symbolic Execution for Embedded Applications**.

- Alejandro Mera, <u>Changming Liu</u>, Engin Kirda, Long Lu **SHiFT: Semi-hosted Fuzz Testing for Embedded Applications**.

Experience

Research Assistant   Advisor: Prof. Long Lu and Prof Engin Kirda   Sept 2019 - Now
Khoury College of Computer Science, Northeastern University, Boston MA, USA

Research Intern   Mentor: Dr. Kapil Singh   May 2021 - Aug 2021
T.J. Watson Research Center, IBM Information Security Research, Yorktown Heights, NY, USA
-   Building infrastructure for cloud services to establish trust.

Research Intern   Mentor: Dr. Bin.B.Zhu   Sept 2018 - March 2019
Software analytics group, Microsoft Research Asia, Beijing, China
-   Designing and implementing scalable fuzzing approach for concurrency bugs.

Research Intern   Mentor: Dr. Bin.B.Zhu   Sept 2018 - March 2019
Software analytics group, Microsoft Research Asia, Beijing, China
-   Integrating deep learning-based object detection framework into outlook's anti-phishing system.

Research Assistant   Advisor: Prof. S.M.Yiu   July 2015 - Sept 2015
Computer Science Department, University of Hong Kong, Hong Kong, 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

Talks:	Presentation in ACM MM'18; Talk in Korea University(Oct, 2018)
Programming:	Python(practiced);C/C++(practiced);Ocaml(familiar);Java(Basic);
Hobbies:	Badminton and violin.
Bug Hunt:	Find 14 new undefined behaviors bugs in the Linux kernel that are either acknowledged or patched.