

# Changming Liu

PhD Candidate, Northeastern University, Boston, MA

## Contact Information

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

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## Education

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### Northeastern University

PhD student of Cybersecurity in Khoury College of Computer Science

Advised by Prof Engin Kirda

Boston, USA

Sept 2019 - Now

### 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

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- 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.

## Under submission

- Changming Liu, Alejandro Mera, Engin Kirda, Meng Xu, Long Lu. **CO3: Concolic Co-execution for Embedded Applications**.

## Experience

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**Research Assistant** Sept 2019 - Now  
 Khoury College of Computer Science, Northeastern University, Boston MA, 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 2018 - March 2019  
 Software analytics group, Microsoft Research Asia, Beijing, China  
 - Designing and implementing scalable fuzzing for concurrency bugs.

**Research Intern** 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** 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

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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

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**Talks:** Presentation in ACM MM'18; Talk in Korea University(Oct, 2018)  
**Programming:** C/C++(practiced);Python(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.