

Xin Jin | Curriculum Vitae

Baker Systems Engineering 439, The Ohio State Univeristy – Columbus, Ohio

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EDUCATION

The Ohio State University

Ph.D. student in Computer Science and Engineering

Columbus, USA

Aug. 2018–Present

- **Research interests:** software security, machine learning, and applied cryptography.
- **Advisor:** Prof. Zhiqiang Lin.

Northwestern Polytechnical University

B.S. degree in Electrical Engineering

Xi'an, China

Sep. 2013–Jul. 2017

- Excellent graduate and Outstanding Prize Scholarship receipt (top 0.1%).

RESEARCH EXPERIENCE

Holistic Edge Security

Cisco Research

PhD Research Intern

May 2022–Aug. 2022

This project aims to edge perform holistic security analysis. Specifically, layered attack graphs are generated by analyzing NVD CVE database with name entity recognition (NER) and word embeddings. By training and testing on 76K CVE descriptions and 177K entities, our NER models outperform prior works by 10.2% in F1 score and t-SNE visualizations demonstrate the effectiveness of word embedding models.

Predicting function names in stripped binaries

The Ohio State University

Graduate Research Assistant

Dec. 2021–Aug. 2022

This project aims to prediction function names in stripped binaries with context-sensitive execution-aware code embeddings. To jointly learn the execution behavior of function instructions and calling context, a novel neural architecture is proposed with the CodeWordNet module to solve OOV issues. With evaluations on 1.M binary functions, our model outperforms the state-of-the-art works by up to 36% in F1 score.

A Market-scale Study of IoT

The Ohio State University

Graduate Research Assistant

Jan. 2021–Aug. 2022

The project studies IoT market from the mobile app perspective. To take a market-scale snapshot of IoT adoption, a large mobile-IoT app set is collected by **natural language processing** and **ensemble learning**. Vulnerable IoT specific library usage, crypto-API misuse, and Janus vulnerabilities are found with **static taint analysis**.

Multi-layer Restoration in Encrypted Optical Cloud Networks

University of Science and Technology of China, China

Undergrad Research Assistant

Feb. 2017–Apr. 2018

This project proposes a multi-layer restoration scheme for elastic optical network failures with encryption solution deployment, in which a mixed integer linear programming model is designed to formulate broken virtual mapping topology.

PUBLICATION

- **Xin Jin**, Kexin Pei, Jun Yeon Won, Zhiqiang Lin, "SymLM: Predicting Function Names in Stripped Binaries via Context-Sensitive Execution-Aware Code Embeddings", to appear in ACM Conference on Computer and Communications Security (CCS), 2022.
- **Xin Jin***, Sunil Manandhar*, Kaushal Kafle, Zhiqiang Lin, Adwait Nadkarni, "Understanding IoT Security from a Market-Scale Perspective", to appear in ACM Conference on Computer and Communications

Security (CCS), 2022. (* equal contributions)

- **Xin Jin**, Wei Lu, Shiqi Liu, Zuqing Zhu, "On Multi-Layer Restoration in Optical Networks with Encryption Solution Deployment", IEEE/OSA Optical Fiber Communication Conference, 2018.
- Wei Lu, **Xin Jin**, Zuqing Zhu, "Game Theoretical Flexible Service Provisioning in IP over Elastic Optical Networks", IEEE International Conference on Optical Communications and Networks, 2017.
- Xiaofeng Lu, Ruonan Zhang, Yuliang Zhou, Jiawei Liu, **Xin Jin**, Qi Guo, and Chang Cao, "Convolution Modeling and Antenna De-embedding for Wideband Spatial mmWave Channel Measurement", IEEE Wireless Communications and Networking Conference, 2017.

SELECTED AWARDS AND HONORS

- **Excellent Graduate** (top 1.2% of Northwestern Polytechnical University) 06/2017
- **National Scholarship** (top 1.4%), by Ministry of Education, China 11/2016, 11/2015, 11/2014
- **Outstanding Prize Scholarship** (top 0.1% of Northwestern Polytechnical University) 11/2015
- **Championship** at item "Fira football", 2015 Chinese Robot Competition 10/2015
- **Championship** at item "Grabbing ball", 2015 International Underwater Robot Competition 07/2015

RESEARCH GRANT EXPERIENCE

Assisted in writing the following research grant:

Type-aware recovery of symbol names in binary code: a machine learning based approach

2020 Amazon Research Award (Awarded), PI: Prof. Zhiqiang Lin.

WORK EXPERIENCE

- PhD research intern, Cisco Research, mentored by Dr. Ashish Kundu, Summer 2022.

TEACHING EXPERIENCE

- Autumn 2018/Spring 2019: Computer Networking and Internet Technologies (CSE 3461), Teaching Assistant, OSU
- Autumn 2019: Information security (CSE 4471), Teaching Assistant, OSU

PROFESSIONAL EXPERIENCE

Reviewer

- IEEE Transactions on Dependable and Secure Computing (TDSC), 2022

External Reviewer

- ACM Conference on Computer and Communications Security (CCS), 2022.
- IEEE Symposium on Security and Privacy (IEEE S&P), 2022.
- USENIX Security Symposium (USENIX Security), 2021, 2022.
- Network and Distributed System Security Symposium (NDSS), 2020
- European Symposium on Research in Computer Security (ESORICS), 2022.
- IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), 2021, 2022
- EAI International Conference on Security and Privacy in Communication Networks (SecureComm), 2020

SKILL SET

- Programming: Java, C/C++ (CUDA), Python, Matlab, Git, MySQL, HTML/CSS.
- Machine Learning: Scikit-learn, Tensorflow (Keras), Pandas, Pytorch.
- Reverse Engineering: Jadx, JEB, APKTool, Ghidra, Burpsuite.
- Program analysis: GDB/LLDB, Xposed, Soot, LLVM (pass), MLIR.