

DONGFANG ZHAO

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EDUCATION

Indiana University Bloomington, IN, US Major: System Security and Privacy Minor: Applied Machine Learning <i>PhD in Computer Science</i>	<i>Aug 2018 - 2026</i>
Indiana University Bloomington, IN, US <i>Master of Science in Computer Science</i>	<i>Aug 2018 - Dec 2024</i>
Shandong University, Shandong, China <i>B.Eng. in Computer Science and Technology</i>	<i>Sept 2014 - June 2018</i>

TEACHING EXPERIENCE

Instructor on Record, Indiana University Bloomington CSCI-C 291 / INFO-E 111 System Programming with C and Unix	<i>Spring 2026 & Spring 2025 & Spring 2024</i>
Instructor on Record, Indiana University Bloomington CSCI-B 430 / INFO-I 430 Security for Networked Systems	<i>Fall 2025</i>
Assistant Instructor, Indiana University Bloomington B430/I430 Security for Networked Systems	<i>Fall 2024 & Fall 2023</i>
Assistant Instructor, Indiana University Bloomington I521/B546 Malware: Threat and Defense	<i>Fall 2021 & Fall 2020</i>
Assistant Instructor, Indiana University Bloomington B547/I533 Systems & Protocol Security & Information Assurance	<i>Spring 2021 & Spring 2020</i>

SKILLS

- Programming and development: Python, PHP/HACK, MySQL, C/C++, Java, JavaScript, HTML, CSS, Node.js, Apache, flutter, AWS, Perl
- Platforms/Tools: Linux, Git, Docker, Wireshark
- Machine Learning: PyTorch, Keras, Scikit-Learn, Natural Language Processing(NLP)
- Specializations: Security Assessment, Data Privacy, Artificial Intelligence, Software Engineering, Web Analysis, Internet of Things (IoT)

WORK EXPERIENCE

Fullstack Software Engineer Intern — M·CAM International LLC (Remote) Maintained and improved DOORS™ (web-based IP analysis) across frontend/backend; focused on robustness and security. <ul style="list-style-type: none">• Stabilized PostgreSQL XML ingestion pipeline (parser fixes, correctness validation, AWS Batch/manual run workflow).• Eliminated recurring functioning errors and improved throughput via profiling, indexing, and concurrency tuning.• Built CI/CD-backed test coverage, Dockerized dev environment, verification scripts, and maintainer-facing documentation.	<i>May–Jul 2025</i>
Meta (Facebook) — Software Engineer PhD Intern (Infrastructure), Menlo Park, CA Develop Platform-level Filtering Funnel for integrity <ul style="list-style-type: none">• Developed a high-performance filtering funnel capable of handling million-level QPS (~2.4M queries per second at peak) to optimize traffic flow and reduce load on downstream resource-intensive models, achieving significant savings in resource costs.• The system efficiently fetches lightweight model results and features from the featureStore, applying custom thresholds	<i>June 2022 - Aug 2022</i>

and user-defined strategies for refined traffic filtering, complemented by comprehensive logging mechanisms for effective monitoring and debugging post-unit testing.

PUBLICATIONS

* denotes a co-primary authorship

Alexa, is the skill always safe? Uncover Lenient Skill Vetting Process and Protect User Privacy at Run Time

Dongfang Zhao*, Tu Le*, Zihao Wang, Xiaofeng Wang, Yuan Tian

The 46th International Conference on Software Engineering (ICSE 2024)

Voice Assistant(Alexa) NLP Reverse Engineering

Who's In Control? On Security Risks of Disjointed IoT Device Management Channels

Y. Jia, B. Yan, L. Xing, **D.Zhao**, X. Wang, Y. Zhang, Y. Liu, K. Zheng, Y. Zhang, D. Zou, H. Jin.

The ACM Conference on Computer and Communications Security (CCS), 2021

Access Control IoT

Shattered Chain of Trust: Understanding Security Risks in Cross-Cloud IoT Access Delegation.

Bin Yuan*, Yan Jia*, Luyi Xing, **Dongfang Zhao**, Xiaofeng Wang, Deqing Zou, Hai Jin, Yuqing Zhang.

The 28th USENIX Security Symposium, 2020

Identity and Access Management(IAM) Access Delegation IoT

Burglars' IoT Paradise: Understanding and Mitigating Security Risks of General Messaging Protocols on IoT Clouds

Yan Jia, Luyi Xing, Yuhang Mao, **Dongfang Zhao**, Xiaofeng Wang, Shangru Zhao, Yuqing Zhang.

The 41st IEEE Symposium on Security and Privacy (Oakland), 2020

Messaging Protocol Analysis IoT Oauth MQTT

RESEARCH IN PROGRESS

DocuScope: Documentation-Driven Protocol Security Analysis via Loose-End Mining and Agentic LLMs

Dongfang Zhao, Wenzuan Fu, Yan Jia, Tianhao Mao, Xiaofeng Wang, Hang Zhang

Targeting CCS, 2026

LLM RAG Protocol Analysis AI Agent

Shining Light into the Tunnel: Understanding and Detecting Network Traffic of Residential Proxies

Ronghong Huang, **Dongfang Zhao**, Xianghang Mi, Xiaofeng Wang

Arxiv 2024

Residential Proxy Machine Learning Network Analysis

HONORS & AWARDS

Indiana University Bloomington-Luddy PhD instructor award

2025

Acknowledgments for proxy network suspicious traffic analysis discoveries from different proxy providers (IPRoyal, Packetstream)

2023

Briefing on Black hat Asia

2021

Security research reported by DARKReading

2021

Apple Homekit design vulnerability: CVE-2020-9978.

2020

- Vulnerability acknowledgments on macOS and iOS

Bounty for the vulnerabilities in IoT cloud delegation process

2019

- We received acknowledgments from Samsung SmartThings (\$2000 bounty), Philips Hue.

Other acknowledgments for vulnerability discoveries from different platforms

2019

- The Microsoft Security Response Center(MSRC) Online Acknowledgement.(October 2019)

- The vulnerabilities and design flaws found in IoT platforms and MQTT received the acknowledgments from AWS, IBM, Eclipse Mosquitto, Tuya Smart, Suning, etc.