MENGFEI(Angela) REN

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RESEARCH STATEMENT

My present academic focus revolves around the intersection of **Software Engineering** and **IoT Security**. Specifically, I am dedicated to creating comprehensive security testing tools that leverage advanced software engineering methodologies with other techniques. These tools aim to enhance the security analysis of IoT devices, wireless protocols, and other ad-hoc ecosystems.

EDUCATION

University of Texas, Arlington *Aug. 2017 – Aug. 2023*
Ph.D. in Computer Science
Dissertation: Fuzz Testing of Zigbee Protocol Implementation
Advisors: Yu (Jeff) Lei and Jiang Ming

University of Texas, Arlington *Aug. 2011 – Dec. 2013*
M.S in Computer Science

China University of Petroleum *Sept. 2007 – Jul. 2011*
B.S in Computer Science and Technology

PEER-REVIEWED PUBLICATIONS

P4 **Intelligent Zigbee Protocol Fuzzing via Constraint-Field Dependency Inference** *ESORICS '23*
Acceptance Rate: 19.5%
Mengfei Ren, Haotian Zhang, Xiaolei Ren, Jiang Ming, Yu Lei
In *Proceedings of the 28th European Symposium of Research in Computer Security.* The Hague, The Netherland. 2023.

P3 **Security Analysis of Zigbee Protocol Implementation via Device-agnostic Fuzzing** *DTRAP Journal '22*
Mengfei Ren, Xiaolei Ren, Huadong Feng, Jiang Ming, Yu Lei
In *ACM Digital Threats: Research and Practice*. 2022.

P2 **One Size Does Not Fit All: Security Hardening of MIPS Embedded Systems via Static Binary Debloating for Shared Libraries** *ASPLOS '22*
Acceptance Rate: 20.1%
Haotian Zhang, **Mengfei Ren**, Yu Lei, Jiang Ming
In *Proceedings of the 27th International Conference on Architectural Support for Programming Languages and Operating Systems*, Lausanne, Switzerland. 2022.
ACM Artifacts Evaluation Badges: *Functional, Available, Reproduced*

P1 **Z-Fuzzer: Device-agnostic Fuzzing of Zigbee Protocol Implementation** *WiSec '21*
Acceptance Rate: 28.1%
Mengfei Ren, Xiaolei Ren, Huadong Feng, Jiang Ming, Yu Lei
In *Proceedings of the 14th ACM Conference on Security and Privacy in Wireless and Mobile Networks*. Abu Dhabi, UAE (Virtual). 2021.
ACM Artifacts Evaluation Badges: *Functional, Available, Reproduced*
0-day Vulnerabilities Detected: *CVE-2020-27890*, *CVE-2020-27891*, *CVE-2020-27892*

SUBMITTED & UNDER REVIEW

S3 Fuzzing Zigbee Protocol Implementation with Combinatorial Testing

S2 Revisiting Optimization-Resilience Claims in Binary Diffing: Insights from Peephole Optimization Analysis

S1 Low-entropy Packed Binary Detection using Hardware Performance Counters

TEACHING EXPERIENCE

University of Alabama in Huntsville
CPE 645 Computer Network Security

University of Texas at Arlington
CSE 4380/5380 Information Security I Laboratory

INDUSTRIAL EXPERIENCE

Toyota North America (Plano, TX) *May. 2021 – Aug. 2021*
Intern – Vehicle Security Testing

Secureworks (Atlanta, GA) *Jan. 2015 – Jul. 2016*
Software Dev Engineer

HORNORS AND REWARDS

UT Arlington 2023 Summer Dissertation Fellowship *2023*

UT Arlington CSE Cyneta Networks Outstanding Graduate GTA *2022*

USENIX Security Symposium Diversity Grant *2022*

IEEE Symposium on Security and Privacy Student Travel Grant *2019*

PROFESSIONAL SERVICES

Conferences Committee:

IEEE SoutheastCon 2024 Technical Program Committee *2023*

External Reviewers:

USENIX Security Symposium (USENIX Sec) *2021 – 2023*

IEEE/ACM International Conference on Automated Software Engineering (ASE) *2020*

ACM Conference on Computer and Communications Security (CCS) *2019 – 2020*

International Conference on Information and Communications Security (ICICS) *2019 – 2021*

IEEE Transactions on Dependable and Secure Computing (TDSC) *2020*

IEEE Transactions on Software Engineering (TSE) *2022*