MENGFEI(Angela) REN

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RESEARCH STATEMENT

My present academic focus revolves around the intersection of **Software Engineering** and **Cybersecurity**. Specifically, I am dedicated to developing comprehensive security analysis tools that leverage **advanced software engineering methodologies** with other techniques. These tools aim to enhance the security analysis of IoT wireless protocols, modern compilers, AI-based security applications and other ad-hoc systems.

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
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.

ESORICS '23
Acceptance Rate: 19.5%

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

DTRAP Journal '22

P2 One Size Does Not Fit All: Security Hardening of MIPS Embedded Systems via Static Binary Debloating for Shared Libraries
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*

ASPLOS '22
Acceptance Rate: 20.1%

P1 Z-Fuzzer: Device-agnostic Fuzzing of Zigbee Protocol Implementation
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*

WiSec '21
Acceptance Rate: 28.1%

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

Technical Program Committees:
   IEEE SoutheastCon 2024   *2023*

Peer Reviewers
   The Journal of Systems & Software (JSS)   *2024*

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*