SHUJUN QI

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EDUCATION

Duke University, USA *July 2020 - Present*
PhD Student in Computer Science *GPA: 4.0*

Duke University, USA *Aug 2018 - May 2020*
Master of Science in Computer Science *GPA: 4.0*

Zhejiang University, China *Sept 2014 - June 2018*
Bachelor of Engineering in Computer Science *GPA: 3.86*

RESEARCH EXPERIENCE

Duke University, Durham, USA *May 2023 - Present*
Research Project - Encrypted RDMA for Inter-Enclave Communication
- Proposing an enhanced RDMA protocol that adopts memory access to encrypted memory
- Designing a new RDMA system with smart NIC that incorporates with enclave threat model
- Building application scenarios in confidential computing and database system that leverages the benefits of encyrpted RDMA

Duke University, Durham, USA *May 2022 - May 2023*
Preliminary Project - Multi Trust Anchor Sharing System for Confidential Computing
- Extended Kubernetes cloud platform to support pod abstraction in Trusted Execution Environment
- Proposed and designed a layered attestation architecture to integrate trust metadata from multiple entities
- Incorporated X509 certificate extensions with logic language to transmit attestations and enforce customized policy validations

Duke University, Durham, USA *July 2020 - May 2022*
Research Initial Project - Using Cloud Enclave for Sensitive Data
- Proposed and designed a Trusted Execution Environment abstraction of cloud enclave
- Extended Kubernetes cloud platform to support cloud enclaves and applied policy-based authorizations
- Incorporated cloud enclaves with ImPACT — a multi-institutional data sharing framework

Duke University, Durham, USA *Sept 2019 - May 2020*
Master Thesis - ADRR: An Application Layer Resources Fair Queuing Algorithm for Defending DDoS Attack
- Designed and implemented the Adjusted Deficit Round Robin (ADRR) algorithm
- Provided mathematical proof on the fairness of ADRR algorithm
- Incorporated ADRR algorithm into DDoS defense architecture and present evaluation

Zhejiang University, Hangzhou, China *Aug 2017 - June 2018*
Bachelor Thesis - Anomaly Detection in Active Network Defense System
- Evaluated the characteristics of mimic defense system and active defense system
- Designed the anomaly detection algorithm based on time stamp and content comparison
- Measured the performance of the algorithm with other anomaly detection methods

Zhejiang University, Hangzhou, China *Jan 2016 - Aug 2017*
Research Assistant - Analysis of Resource Defense Model for Novel Active Network Defense System
- Built and optimized ODE model in combination of Mimic Defense, Redundancy Control and Moving Target Defense concepts
- Utilized the ODE model to analyze attacker and defender resources allocation during an attack
- Constructed the strategic selecting algorithm in active defense system

WORK EXPERIENCE

Chainguard, USA *May 2023 - Aug 2023*

Research Intern - MAPLE: Integrating Software Supply Chain Infrastructures with Logic Engine

- Designed a logic attestation language for security policy enforcement
- Implemented a multi-attestation policy logic engine to compile supply chain metadata and make trust decisions
- Proposed an infrastructure that integrate multiple supply chain technologies into cloud deployment authorization architectures

PUBLICATIONS

- CHEN Shuang-xi, WU An-bang, **QI Shu-jun**, LIU Hui, WU Chun-ming. Analysis of Resource Defense Model for Novel Active Defense Modeling. Acta Electronica Sinica, 2019, 47(7): 1557-1565.

SKILLS AND INTERESTS

Programming:	C/C+,Python,Rust,Go,MIPS
Platforms:	Kubernetes, Docker, SGX, TDX
Research Interests:	Security and Privacy, Cloud and Distributed Systems, Trusted Computing, Confidential Computing, Trusted Exectution Environment