Zheng Xinran

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EDUCATION

Tsinghua University - Master of Electronic and Communication Engineering Sep 2020 - Jul 2023

GPA: 3.90/4.00; Rank: 1/82; Key Courses: Machine Learning, Cryptography & Network Security

SiChuan University - Bachelor of Electronic Information Engineering Sep 2016 - Jul 2020

GPA: 3.75/4.00; Rank: 1/79; Dissertation: Image quality assessment (IQA) algorithms

PUBLICATIONS

- **X Zheng**, S Yang, and X Wang, SF-IDS: An Imbalanced Semi-Supervised Learning Framework for Fine-grained Intrusion Detection. *IEEE International Conference on Communications (ICC 2023)*.
- **X Zheng**, S Yang, and X Wang, A Reliable and Decentralized Trust Management Model for Fog Computing in Industrial IoT. *IEEE/IFIP Network Operations and Management Symposium (NOMS 2023)*.
- S Yang*, **X Zheng***, and X Wang, IBA: A secure and efficient device-to-device interaction-based authentication scheme for Internet of Things. *Computer Communications*.
- S Yang, **X Zheng**, and X Wang, A Lightweight Approach for Network Intrusion Detection based on Self-Knowledge Distillation. *IEEE International Conference on Communications (ICC 2023)*.

PATENTS

- Xingjun Wang, **Xinran Zheng**, et al. Methods, devices and electronic devices for securing IoT data interactions, 2022.
- Xingjun Wang, **Xinran Zheng**, et al. Training and detection methods for fine-grained network intrusion detection, 2023.

RESEARCH EXPERIENCE

IDEA(International Digital Economy Academy) - Privacy Computing Algorithm Intern Dec 2022 - Present

- Focus on full homomorphism encryption(FHE) based privacy computing applications, using bit-wise and word-wise schemes and their switching to implement the fusion of non-polynomial and polynomial cryptographic computing for privacy database query.
- Realize a large bit-width privacy data query-multiplication scheme based on CKKS scheme

The University of Hong Kong Shenzhen Research Institute - Research Assistant Sep 2022 - Dec 2022

- Focus on two-round Schnorr multi-signatures and their lattice-based migration. Understand the process of simulation-based security proof and lattice-based security assumptions

COMPETITIONS

SDG Open Hack@Tsinghua University - Award for Technical Innovation Team Dec 2022

- Propose an AI and genomics-based solution for early screening and tracking of liver cancer patients, empowering precision medicine. This work is supported by GENETRON HEALTH, INC

18th National Postgraduate Mathematical Modelling Competition - National First Prize Dec 2021

- Solved the UWB indoor precise localization problem under NLOS error. Used ensemble learning, Kalman filter, and Chan algorithm to achieve TOA localization and trajectory reconstruction. The positioning error is less than 5cm, ranking Top 1.164% among the first prize

Financial loan default prediction (Ali 'Tianchi' competition) - Top 1% Jan 2021

- Conducted cleaning and feature engineering on 47 personal credit features and used a fusion model containing XGBoost, LightGBM, and CatBoost to predict personal loan defaults. The final AUC reached 0.7460, ranking Top 1%

HONORS & AWARDS

National First Prize in the National Postgraduate Mathematical Modelling Competition. (Top 0.1%) Dec 2021

Second Prize Scholarship (Top 5%), Tsinghua University Oct 2021

Outstanding graduate, Outstanding Student, Sichuan University Jul 2020

National Second Prize in National Undergraduate Electronic Design Contest (Top 5%) Oct 2019

First Prize in Provincial Student Smart Car Competition, Electromagnetic tracing category (Top 3%) Aug 2019

LEADERSHIP & VOLUNTEERING

- Initiator of Tsinghua SIGS Big Data and Artificial Intelligence Association.
- Teaching assistants of *Big Data & Machine Learning* and *Cryptography & Network Security* at Tsinghua University.
- Volunteer Teacher at Nei Mongol Sonid Right Banner Comprehensive High School.