Jiawei Wang

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Education

School of Electronics and Computer Science, University of Southampton, UK Sep. 2025 - Mar. 2029
PhD, Computer Science
- School of Electronics and Computer Science and Faculty Scholarship (Full Scholarship)

School of Cyber Science and Engineering, Sichuan University, China Sep. 2021 - Jun. 2024
Master, Network and Information Security
- Cumulative GPA: 3.93/4.0, ranked 1/56
- Core lessons: Theory and Technology for Cybersecurity, Fundamentals of Modern Mathematics, Cryptography and Its Application, Cyberspace Resources Surveying and Mapping, Threat Intelligence Analysis, etc.

College of Cyber Security, Jinan University, Guangzhou, China Sep. 2017 - Jun. 2021
Bachelor of Engineering, Cyberspace Security
- Cumulative GPA: 4.13/5.0, ranked 1/32
- Core lessons: Advanced Mathematics, Linear Algebra, Probability & Mathematical Stat., Information Theory, Cryptography, Data Structure, Programming, General Theory of Security, Operating Systems, Computer Networks, Computer Architecture, Artificial Intelligence, etc.

Research Project Experience

EVPFL: Efficient Mutually-Verifiable Privacy-Preserving Federated Learning Sep. 2021 - Current
A PFL protocol enabling verifiable aggregation with secure evaluation, making progress in addressing malicious security.
- Presented xCKKS scheme, an extension of CKKS, to enable aggregation of Homomorphic Encryption (HE) ciphertexts under multiple keys with T-out-of-N threshold access structure.
- Design a new Zero-knowledge argument for Range Proof of Plaintext Knowledge with Evaluation (RPPK-E) for approximate HE scheme.
- Developed three cryptographic tools (C++) and used Pybind11 to create their Python interfaces; presently deploying the EVPFL system leveraging the designed xCKKS and RPPK-E schemes.
  [Program] (in progress) https://github.com/EVPFL

User Authentication in Virtual Reality Jan. 2020 - Jan. 2023
An knowledge-based user authentication method to against Man-In-The-Room attack in VR.
∗ Won the Excellent Graduation Thesis (Score 96, ranked No. 1 in major)
- Designed the multi-attribute-based VR authentication scheme using dynamic combinations of 3D objects.
- Deployed the VR authentication program by Unity3D, and conducted three user studies.
- Published the paper, produced the poster, and applied for the patent.
  [Program] https://github.com/JiaweiWang-AdrianA/Multi-attribute-User-Authentication

Immune-Based Adaptive Network Situational Awareness Jul. 2022 - Aug. 2023
Research project on immune-based methods for network situational awareness under incomplete conditions.
∗ Participant | National Research and Development Project
- Assisted the project leader to improve and refine the display interface.
- Participated in the project acceptance, handed over work with other development groups, and wrote the presentation documentation.

Entity Resolution of Large Datasets Dec. 2019 - May. 2022
An extensible block scheme-based method for entity resolution in multiple large datasets of product specifications.
∗ Won VLDB DI2KG Competition; ranked 9th and 10th in ACM SIGMOD Program Competition 2022 and 2020
- Proposed the Scheme Aggregation & Block Clustering algorithm, using spectral clustering to link the blocks with the different patterns.
- Designed the program framework, and developed the block clustering module.
- Arranged programming and writing works, coordinated team members, and presented our work at the 2020 VLDB workshop.
  [Program] https://github.com/JiaweiWang-AdrianA/EntityResolution_SABC

Keystone: Blockchain-Based Public Key Management System Jul. 2019 - Jun. 2020
A public key management system based on Blockchain.
∗ Leader | University Innovation Project; won 1st prize in JUN Innovation and Entrepreneurship Competition
- As the main members of the project, proposed the main idea of the algorithm.
- Responsible for the patent application and the project proposal.

Publications (* represents in progress)

[1]* **Wang J**, Zhao L, Chen L, et al. EVPFL: Efficient Mutually-Verifiable Secure Aggregation for Privacy-Preserving Federated Learning.
[2] **Wang J**, He J, Li W, et al. A Secure Duplicate Data Sharing Method against Untrusted Cloud Service Provider[C]. IEEE 12th International Conference on Cloud Networking (CloudNet), IEEE, 2023: 352-359.
[3] **Wang J**, Gao B Y, Tu H, et al. Secure and Memorable Authentication Using Dynamic Combinations of 3D Objects in Virtual Reality[J]. International Journal of Human-Computer Interaction, 2023: 1-19.
[4] **Wang J**, Gao B Y. Analysis of multi-attribute user authentication to against man-in-the-room attack in virtual reality[C]. 23rd HCI International (HCII). Springer International Publishing, 2021: 455-461. (Poster)
[5] **Wang J**, Ye H, Huang J. An Extensible Block Scheme-Based Method for Entity Matching[C]. DI2KG@ VLDB, 2020.
[6] Yang Y, **Wang J**, Zhao H, et al. Emergency Evacuation: Dynamic Network Diversion[J]. Journal of Physics: Conference Series. IOP Publishing, 2019, 1419(1): 012043.

Patents

Domestic Patents Sep. 2020
A user authentication method for VR head-mounted displays in virtual environments. CN202010995943.8

Domestic Patents Jun. 2020
Data security sharing system using blockchain-based key distribution. CN202010098425.6

Extracurricular Experience

- Leader of SCU Cyber Range Integrated Development Operations and Maintenance Group, organize the members to develop and maintain platform resources; 2022-2023.
- Founder of JNU Cyberspace Security College WeChat Public Account, had over 1k followers; 2017 - 2021.
- Leader of JNU Information Institute Debate Team, won 1st place in JNU Fresh Students Competition; 2018 - 2019.
- Participant of Volunteer Teaching Services at Siem Reap, Cambodia, taught local pupils Chinese subject; 2018.

Skills and Interests

Program Skills: Python, C/C++, Java (Basic), HTML+CSS (Basic); LaTeX, Github, Unity3D, SPSS (Basic).
Language Skills: Chinese (Native), English (Duolingo 120, TOEFL iBT 96).
Research Areas: Privacy Protection, Applied Cryptography, Federated Learning, etc.
Interest Topics: AI Security, Metaverse Security, Blockchain, etc.

Honors and Other Prizes

National Cyber Special Scholarship (less than 100 undergraduates per year)	2018 - 2019
National Scholarship (twice)	2018 - 2020
Sichuan University Excellent Graduate Student Scholarship (thrice)	2021 - 2024
Sichuan University Excellent Graduate Student	2022 - 2023
Jinan University 5A Outstanding Student Award Program "Academic Star" (10 students per year)	May. 2021
Jinan University Outstanding Graduate	May. 2021
Jinan University Excellent Student Leader	2019 - 2020
Jinan University Excellent Student (twice)	2017 - 2019
Jinan University Excellent Student Scholarship	2017 - 2018
Interdisciplinary Contest in Modeling Meritorious Winner	Mar. 2019
National Cryptography Challenge Competition 3rd prize	Aug. 2019
National Mathematical Modeling Competition 2nd Provincial Prize	Sep. 2019
Zhuhai City "Yongyuan" Business Elite Challenge 2nd Prize	Apr. 2019
Jinan University Fresh Students Debate Competition Excellent Debater	Nov. 2017
Jinan University Winter Publicity Team Excellent Volunteer	Apr. 2018

References

Han Wu, H.Wu@soton.ac.uk
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