Junhao Zhang

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EDUCATION

INSTITUTE OF INFORMATION ENGINEERING, CHINESE ACADEMY OF SCIENCES   Beijing, China
Master of Network and Information Security   August 2022 - June 2025

- **State Key Laboratory of Information Security | Student Activities**: Laboratory Graduate Student Association Vice President
- **GPA**: 3.78 / 4.0 | Recipient of a postgraduate academic scholarship for each academic year

PERSONAL CAPACITY

- **Educational Content Developer**: Developed 7 algorithm course projects on Lanqiao Cloud Classroom, which encompassed over 100 lessons and attracted a learner base exceeding 100,000.
- **Digital Content Creator**: Excel at synthesizing and compressing knowledge into engaging blog content, researching with enthusiasm. ("风骨散人 Chiam"):
  o Acknowledged as a **CSDN Blog Expert**, achieving a rank of 110 within the community.
  o Named among the **Top 100 authors** in the Tencent Cloud+ Community in 2020.
  o Honored with the **Best Author of the Year** award.
- **Cybersecurity Specialist**: Proficient with a range of security tools:
  o Including BurpSuite, SQLmap, AWVS, Nmap, MSFConsole, etc.
  o Adept at wireless penetration tools such as aircrack-ng, Wifipumpkin3, Fluxion, and others.
  o Knowledgeable about manifold man-in-the-middle attacks: SSL man-in-the-middle, ARP Poisoning, DHCP man-in-the-middle, ICMP man-in-the-middle.
  o Skilled in traffic analysis and in conducting basic web vulnerability penetration tests.
- **Machine Learning Practitioner**: Based on a robust understanding of machine learning theory, has hands-on experience in developing and training models for Natural Language Processing (NLP) and Computer Vision (CV) projects.
- **Multi-Language Programmer**: Proficient in multiple programming languages: Python, Java, C++, C, Go, etc., with extensive experience in database development using MySQL, Oracle, etc., and a wealth of project engineering experience.
- **Expertise in using data structures to solve problems**: Knowledge of data structures and their application in programming for a variety of algorithms, such as segment trees, the Aho-Corasick algorithm, etc.
- **Expertise in using algorithms to solve problems**: Proficiency in using algorithms in real-world applications, especially basic graph-theoretic algorithms such as network flows, minimum cost maximum flow (MCMF), 2-SAT problems, and bipartite graph problems.
- **Foundation in mathematics**: Knowledge of the fundamentals of number theory, including the pigeonhole principle, Euler's theorem, and the Möbius inversion formula.

ACHIEVEMENTS

- **Two Utility Model Patents:**
  o "A Kind of LED Lighting Fixture." China. ZL202022920709.7, December 8, 2020.
  o "An Electronic Information Display Device." ZL 202022910694.6, December 8, 2020.
- **Publication:**
  o Mengyao Chen, Xiaofei Yu, **Junhao Zhang**, Jie Ma. DeCoGAN: Photo Cartoonization Based on Deformation Consistency GAN. ICIC 2024
  o Mengyao Chen, Xinghua Zhang, **Junhao Zhang**, Quangang Li and Tingwen Liu. Empowering LLMs for Multi-Page Layout Generation via Consistency-Oriented In-Context Learning. CIKM 2024
- **Several Software Copyrights**
- **Second Prize** in COMAP's Mathematical Contest in Modeling (MCM) and Interdisciplinary Contest in Modeling (ICM)
- **First Prize** in Dimension Cup National College Mathematical Contest in Modeling
- **First Prize** in The Contest Of Lanqiao Cup Shandong Provincial Competition(Algorithm Competition)
- **First Prize** in The Contest Of Lanqiao Cup National Finals(Algorithm Competition)
- **Bronze Medal** in Shandong Province College Student ACM-ICPC Programming Competition
- **Silver Award** in National College Student Algorithm Design and Programming Challenge(Only 3 months of training)
- **First Prize** in Chuangzhi Cup National College Student IT Competition
- **Third Prize** in Discovery Cup National Competition

Key Technologies for Cross-Domain Proactive Security Defense in Distributed Resource Collaborative Networks

Primary responsibility: *Research and Development of Data Element Circulation Infrastructure*　　　May 2023 - Present

Participants: Institute of Information Engineering, Venustech Group Inc

Project Type: National Key Research and Development Program of China(2023YFB3107605)

- Focused on challenges of cross-domain exchange of heterogeneous data, low trust between management domains, and controlled data usage.
- Researched and developed a trusted and controlled execution environment to prevent data leakage in diverse usage environments.
- Negotiated usage control policies and accurately audited abnormal policy execution.
- Developed a data circulation support system (Data Vault) to achieve controlled sharing of massive data throughout its lifecycle post cross-domain exchange.

Penetration Testing System for In-Vehicle Wi-Fi and Bluetooth

Primary responsibility：*Overall Architecture Design and Wi-Fi Module*　　　March 2022 - August 2022

Participants: Institute of Information Engineering, China Automotive Engineering Research Institute

- Researched technical details of target vehicles using open-source technical documentation.
- Collected software versions, development libraries, chip models, and hardware interfaces from promotional pages and news reports.
- Conducted active reconnaissance, including service scanning and vulnerability scanning, to identify open services and known network security vulnerabilities.
- Performed penetration testing on the security of Wi-Fi and Bluetooth connections in vehicle systems, including start/stop tests, connection status display, configuration display, communication connections, phishing Wi-Fi, port scanning, and vulnerability detection.
- Tested man-in-the-middle attacks during OTA upgrade processes.

Research on Multi-Modal Document Layout Generation Algorithm

Primary responsibility: *Algorithm Research*　　　January 2024 - June 2024

- Main Challenges: high model training costs of deep learning methods, excessively long prompts for layout representing, strict consistency between multi-pages
- Innovative Techniques: a data-efficient and training-free multi-page layout generation framework built upon in-context learning with three major modules:
  - Serialization Based on Code Blocks builds efficient prompts by populating layout data into the template provided by the function body
  - Self-Correcting Reasoning Hint guides LLMs to decompose the complex reasoning task into multi-steps
  - Consistency-Oriented Multi-Round Generation ensures highly consistent layouts by updating the query pages and saving the task state in each dialogue
- Efficient Results: Achieved efficient multi-page document layout generation through these advanced techniques.

Research on the Protection of Personal Rights in Privacy Data

Primary responsibility: *Logs module Development*　　　June 2021 - Present

Participants: Institute of Information Engineering

Project Type: National Key Research and Development Program of China(2021YFB3101301)

- **Audit Logs and Data Security:**
  - Research the role of audit logs in self-storage within privacy computing and their role in shared environments.
  - Participate in the formulation and implementation of auditing mechanisms to ensure transparency and traceability in data operations.

Wi-Fi Security Audit System

Primary responsibility: *Overall Project Development*　　　February 2022 - June 2022

Developed a Wi-Fi security audit system with the following capabilities:

- Attack Testing: Includes de-authentication attacks, authentication flood attacks, and man-in-the-middle attacks.
- Weak Password and Phishing Attack Testing: Identifies weak Wi-Fi passwords and simulates phishing attacks.
- Wi-Fi Scanning and Vulnerability Correlation: Scans networks for vulnerabilities and correlates findings for comprehensive analysis.
- Audit Reporting: Generates detailed reports outlining vulnerabilities and suggested mitigations.

Integrity Technology Group Inc *

Primary responsibility: *Security Engineer (Intern)*　　　July 2023 - October 2023

Assisted in the design and development of the Chunqiu platform:

- Completed design, development, and self-testing of functional modules to ensure quality and stability.
- Ensured developed modules passed all tests and were smoothly deployed.
- Maintained normal operation of the system post-deployment.