

# WENHAO LIAO

+86-181-8025-7205 | whliao@std.uestc.edu.cn | whliao.me

Shenzhen, China

## EDUCATION

- **University of Electronic Science and Technology of China** Sep 2022 - Jun 2025  
Master of Engineering (M.E.) in Computer Technology, Supervisor: Fang Binxing  
Chengdu, China
- **Xihua University** Sep 2017 - Jun 2021  
Bachelor of Engineering (B.E.) in Automation  
Chengdu, China

## PATENTS AND PUBLICATIONS

C=CONFERENCE, J=JOURNAL, P=PATENT, T=THESIS

- [C.1] **Wenhao Liao**, Jia Sun, Haiyan Wang, et al. (2024). **Semantic-Integrated Online Audit Log Reduction for Efficient Forensic Analysis**. In *International Conference on Advanced Data Mining and Applications, ADMA 2024*. December 3-5, 2024, Sydney, Australia. (CORE-C, CCF-C)
- [J.1] Mintao Zhang, **Wenhao Liao**, Zhaojin Qing, et al. (2024). **CNN-Based Fault Diagnosis of Rolling Bearings Using MCU**. *Mechanical Science and Technology for Aerospace Engineering*, Vol. 43, Issue 2, pp. 282-290. DOI: 10.13433/j.cnki.1003-8728.20220228. (In Chinese)
- [P.1] **Wenhao Liao**, Zhaoqian Gu, Haiyan Wang, et al. (2024). **Methods, Systems, Electronic Devices, and Storage Media for Audit Log Reduction**. *China National Intellectual Property Administration*. Acceptance Date: September 20.
- [P.2] Haiyan Wang, Weimin Yang, Zhaoquan Gu, Junchi Bao, Ke Zhou, **Wenhao Liao**, et al. (2023). **Method, Device, Equipment, and Storage Media for Named Entity Recognition in Cybersecurity**. *China National Intellectual Property Administration*, Patent No. ZL 2023 1 0823366.8. Grant Date: July 6.

## RESEARCH EXPERIENCE

- **Terminal and Traffic based Multi-source Distributed Cyber Audit System** March 2024 - Present  
Pengcheng National Laboratory  Shenzhen, China  
Team Member. Advisor: Prof. Zhaoquan Gu
  - Conducted an extensive literature review on audit log reduction, highlighting gaps in existing methodologies related to online reduction algorithms.
  - Developed and implemented SOPR, an online audit log reduction technique designed to preserve traceability; published the associated paper and patent.
  - Currently advancing online audit log reduction through multi-granularity graph reduction techniques.
- **Consensus-Centric Network Testing and Simulation Verification Platform** Jul 2023 - Jan 2024  
Pengcheng National Laboratory  Shenzhen, China  
Team Member. Advisor: Prof. Jianxin Li.
  - Conducted a comprehensive review of APT detection using host provenance graphs, reproduced various related works and delivered several related presentations.
  - Implemented DUPIN, an online APT detection and investigation system based on provenance graphs, optimizing the balance between detection accuracy, operational occupancy, and maintenance costs.
  - DUPIN showed promising results in preliminary laboratory verifications, with potential for further enhancement. Patents and papers are in progress.
- **Graph Theory, Graph Neural Networks, and Their Applications in Cybersecurity** Sep 2022 - Jun 2023  
Academician Fang Binxing Experimental Class  Shenzhen, China  
Core Member. Advisor: Prof. Jianxin Li.
  - Explored conventional graph theory and graph-based methods for cybersecurity applications.
  - Investigated the latest research on entity alignment and community search based on GNN models, presenting multiple reports and summaries in the workshop.
  - Awarded "Model Student" upon course completion.
- **Multivariate Time Series Analysis for Intelligent Network Base Station Operation** Jul 2022 - Sep 2022  
China Mobile Communications Group Sichuan Co., Ltd  
Core Member. Advisor: Dr. Haosong Gou.
  - Engineered an XGBoost model to predict network base station outages for over 280 alarm types, achieving an initial prediction accuracy of 81%.
  - Highlighted the significance of alarms through outage alarm rates within multi-alarm multi-terminal time series data, transforming this into a tabular format suitable for the XGBoost model.

- **Online Bearing Fault Diagnosis Based on Intelligent Edge Computing** Jan 2021 - Jun 2021  
Xihua University Wireless Network and Communications Group   
**Core Member. Advisor: Dr. Mintao Zhang.**  
◦ Deployed CNN neural network on STM32 microcontroller via CubeAI framework, resulting in a bearing fault recognition accuracy of 98.9% (about 20ms per sample), achieving state-of-the-art intelligent edge computing.  
◦ Implemented the full system, including data preprocessing, model training, model deployment, upper computer serial communication, and TFT-LCD screen visualization display.
- **Research on User Profiling and Its Applications Based on Mental Health Big Data** May 2018 - Jun 2019  
Xihua University Wireless Network and Communications Group   
**Team Member. Advisor: Prof. Chaojin Qing.**  
◦ Completed part of the project proposal, and conducted the background investigation and system framework sections.  
◦ Conducted preprocessing and preliminary analysis on the desensitized dataset provided by the school, verifying the correlation between health big data and academic development.

## HONORS AND AWARDS

- **First-Class Graduate Student Academic Scholarship** Oct 2024  
University of Electronic Science and Technology of China
- **Outstanding Graduate Student** Nov 2023  
University of Electronic Science and Technology of China
- **Second-Class Graduate Student Academic Scholarship** Oct 2023  
University of Electronic Science and Technology of China
- **Third-Class Graduate Student Academic Scholarship** Oct 2022  
University of Electronic Science and Technology of China
- **Second-Class Scholarship** Nov 2019  
Xihua University
- **Provincial Award at the 2019 TI Cup National Undergraduate Electronics Design Contest** Sep 2019  
Ministry of Industry and Information Technology of China and the Ministry of Education of China
- **Third Prize in the Undergraduate and Postgraduate Group at the 8th China Software Cup** Jul 2019  
Ministry of Industry and Information Technology of China and the Ministry of Education of China
- **Third-Class Scholarship** May 2019  
Xihua University

## SKILLS

- **Programming Languages:** Python, C, C++, R
- **Database Systems:** Neo4j, SQL, SQLite
- **Data Science & Machine Learning:** PyTorch, Scikit-learn, Pandas, Numpy, Scipy
- **DevOps & Version Control:** Git, Docker, Anaconda
- **Other Tools & Technologies:** LaTeX, VSCode, Jupyter Notebook, Matplotlib, ggplot2
- **Research Skills:** Literature Review, Experimental Design, Data Analysis, System Modeling, Paper Writing

## LEADERSHIP AND ACTIVITIES

- **Team Leader of the Big Data and Machine Learning Group (Undergraduate)** Jun 2019 - Jun 2020  
Xihua University Wireless Network and Communications Group  
◦ Participated in several laboratory research and development projects.  
◦ Organized training for new laboratory members and assisted in participating in laboratory projects.