Kai Chieh (Jay) Weng

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Research Interests

- **Embedded Vehicle Network Security**: Research on vulnerabilities in in-vehicle communication protocols (e.g., CAN networks), with hands-on experience using embedded development boards and prototyping in automotive systems.
- **Cybersecurity**: Interest in cryptographic, pwn, and forensic challenges; participation in Capture The Flag (CTF).
- **Kernel and Network**: Development and analysis of 5G proxy implementations and Linux kernel modules.
- **Cognitive Neuroscience**: Exploration of interdisciplinary research bridging mathematics and neuroscience.
- **Cryptography**: Focus on concepts such as RSA, ECC, and the algebraic foundations of encryption.

Education

MS **National Central University**, Computer Science & Information Engineering — Feb. 2023 – July 2025

- Laboratory : Advanced Defense Laboratory
- **Thesis:** Real-Time Detection of Attack Features in Automotive Protocols advised by Dr. Fu-Hau Hsu
- GPA: 3.56/4.0
- **Coursework:**
  Linux Operating System, The Attack and Defense of Computer

BS **National Central University**, Mathematics — Sep. 2018 – June 2022

- GPA: 3.43/4.0
- **Coursework:**
  Algebraic Curve, Quantum Computing, Applied Algebra, Matrix Theory

Research Experience

Industrial Technology Research Institute (IRTI), Project Researcher — Hsinchu, Taiwan
FEB. 2024 - CURRENT

- Contributed to 5G Proxy Development for future satellite base station integration.
- Led team coordination and reference reviews.
- Implemented IPtable integration and socket buffer testing to manage traffic.
- Testing congestion controls and discovering critical policy led to delaying.

Institute of Cognitive Neuroscience, Research Assistant — Taoyuan, Taiwan
Spring 2023

- Analyzing electroencephalography under experiments of attention.
- Implementing the research experiment with E-prime programning.
- Publishing two conference papers.
- Discussion of my perspective ideas with Dr. Denise Wu.

Teaching Experience

Freelancer, Personal Tutor — Taoyuan, Taiwan
Sep. 2022 - Current

- Concept of Mathematics and Physics.
- Assisting students to prepare for College Entrance Examination.

Department of Computer Science, Teaching Assistant — Taoyuan, Taiwan
Spring 2023

- Course Name: Principle of Programming Language.
- Assisting students with their assignments and projects.

Publications

Conference Abstracts

Elderly participants share spatial representations with an inanimate partner. May 2021
Poster presented in the International Convention of Psychological Science.
Author : Lee R. -J., ***Wong, K.-J.***, Wu, D. H.

Shared and unshared spatial representation between computers and humans. March 2021
Poster presented in the Annual Meeting of Taiwan Society of Cognitive Neuroscience.
Author : Li, J. -C. Lee R. -J., ***Wong, K.-J.***, Wu, D. H.

Projects

Embedded OS On Raspberry Pi 2024
- Shell and Initialization: Implement a simple shell in bare-metal programming.
- Device Booting: Implement a bootloader to load kernel image into the OS.
- Exception Handler: Configuring register and timer to handle interrupt.
- Memory Allocator: Managing the memory with buddy system.

C Language, Assembly, QEMU, Bare-Metal, Raspberry Pi 3 (ARM)

Appending Linux System Call 2023
- Adding syscall to mapping virtual address into physical address.
- Tracing in how kernel scheduling and to influence weights in scheduling process.

Linux, C Language

UML Editor in Object-Oriented Design 2023
- Understanding the concept of Object-Oriented Structure to Build a UML Editor.

Java, Object-Oriented

Assembly Code Card Game 2022
- Designed and implemented a card game entirely in x86-64 Assembly Code

x86-64 Assembly Code

Fellowship

Using the Simon and SNARC Effect to Examine Shared Spatial Representations in Human-Computer Collaboration. Advisor : Dr. Denise Wu May 2021
Sponsered by National Science and Technology Council.
Author : ***Wong, K.-J.***, Wu, D. H.

Technical Skills

Programming Languages: C/C++, x64-Assembly, Python, Java

Tools: SDK, Arduino, ESP32, Raspberry Pi 3, Linux, radare2, tshark

Languages: Mandarin (Native), English (Advanced), German (Elementary)

Contest

2023 Cyber Security Competition Held by the Ministry of Digital Affairs Oct. 2023 - Nov. 2023
Rank / All : 30 / 199 (Advanced to the Finals).

Extracurricular Activities

2024 HITCON Hacker in Taiwan Conference Aug. 23 2024 - Aug. 24 2024