Sheng-Yan Dai
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Education

- **National Taiwan University of Science and Technology (NTUST)** — Taipei, Taiwan
  Ph.D. in Automation and Control — *Sep. 2025 – Present*
- **National Taiwan University of Science and Technology (NTUST)** — Taipei, Taiwan
  M.S. in Automation and Control (GPA: 4.14/4.3), Focus on Biometrics and Edge AI — *Sep. 2023 – Jun. 2025*
- **Asia Eastern University of Science and Technology (AEUST)** — New Taipei, Taiwan
  Bachelor of Science in Mechanical Engineering (Grade: 83.94/100) — *Sep. 2014 – Jun. 2018*

Experience

- **Nanya Technology Corporation (Semiconductor Manufacturing)** — New Taipei City, Taiwan
  Dry Etching Equipment Engineer — *Dec. 2018 – Aug. 2023*
  - **Equipment Maintenance**: Performed routine maintenance, troubleshooting, and health monitoring of dry etching equipment to ensure stable production.
  - **Production Line Support**: Provided on-shift engineering support, responding to abnormal tool conditions and maintaining high equipment uptime.
  - **Preventive Maintenance & Parts Control**: Executed preventive maintenance, tracked critical parts lifecycle, and optimized consumable usage.
  - **Vendor & Documentation Coordination**: Prepared SOPs and collaborated with vendors for equipment upgrades, installation, and acceptance testing.

Skills

- **Programming Languages:** Python, C
- **Software Engineering & Tools:** PyQt5, Docker, SK8, SQLite, MongoDB
- **AI, Machine Learning & Data Analysis:** TensorFlow, Keras, scikit-learn, scikit-image, OpenCV, NumPy, SciPy, Matplotlib, Seaborn, Pandas
- **Embedded & Systems Programming:** Linux Shell, Linux Kernel, Compiler Tools (Lex & Yacc)

Projects

- **Wrist Vein Verification System on Edge Devices**: Developed a fully contactless wrist-vein biometric system in Python using a self-designed NIR imaging device and the NTUST-IB811 dataset. Implemented ROI extraction, vein enhancement, and a lightweight Siamese neural network for user verification, achieving an average EER of 0.46% $\pm$ 0.20%. Integrated all components into a simplified PyQt5 GUI and deployed the complete pipeline on Raspberry Pi 4 with a processing time of 357.45 $\pm$ 11.56 ms.
- **Micro/EX Compiler**: Implemented a Micro/EX compiler using Lex, Yacc, and C, supporting lexical analysis, syntax parsing, semantic checks, and basic code generation. Successfully passed all professor-provided test programs used for compiler validation.
- **SIC/XE Assembler**: Built a two-pass SIC/XE assembler in C, handling opcode decoding, symbol table generation, operand parsing, and relocation processing. Generated correct SIC/XE object code and passed all professor-provided verification test cases.
- **Computer Organization and Design (RISC-V)**: Implemented Quick Sort using RV64I assembly and built Verilog ALU and Register File modules with custom testbenches. Designed and verified a partial RV64I single-cycle RISC-V processor following the specified datapath architecture, passing all TA-provided test cases.
- **Load-Balancing Proxy Server (Computer Networks)**: Developed a Python-based proxy server supporting Round Robin load balancing, local caching, and cookie-based sticky sessions. Implemented full TCP/HTTP request handling and verified all behaviors using TA-provided test cases, fully meeting project specifications.

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Relevant Coursework During M.S. Program

- Data Structures
- Algorithms
- Advanced Algorithms
- Computer Architecture
- Computer Organization
- System Programming
- Operating Systems
- Compiler Systems Design
- Embedded Systems
- Computer Networks
- Image Processing
- Digital Signal Processing
- Fuzzy Systems and Control
- Python Data Analysis and Machine Learning