Jinming Ren

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Education

University of Electronic Science and Technology of China (UESTC) Sept 2022 — Present

University of Glasgow, Dual Degree Program Sept 2022 — Present

- **Major**: Electronic and Computer Engineering; GPA: 3.87/4.0, Ranking: 2/164 (Top 1%).
- **Relevant Coursework**: Signals and Systems, Stochastic Processes, Artificial Intelligence and Machine Learning, Information Theory, Electrodynamics, Digital Circuit Design, etc.
- **Online Course**: Abstract Algebra, Complex Analysis, Differential Geometry, Control Theory, etc.

Research

GAT-based Multi-Task RL for Robust PVT-Aware Analog Design Ongoing

- Proposed a GAT-based multi-task Reinforcement Learning framework to optimize analog circuits under diverse PVT corners.
- Modeled PVT conditions as graph nodes, enabling adaptive attention to corner-specific bottlenecks.
- Reduced specific violations by 19× and simulations by 69% on `AnalogGym` benchmarks.

System-level Co-Design of RISCV Accelerators for TinyML at the Edge Ongoing

- Designing and implementing hardware-accelerated TinyML kernels that are adaptable and efficient for edge computing using `Chisel`, `Verilog`, `Python` and `C++`.
- Exploring a large multi-dimensional design space using automated methods (e.g. heuristic and evolutionary algorithms) to identify optimal configurations balancing accuracy, energy, and latency.
- Conducted under the supervision of Prof. Yun Li.

Movable Antenna (MA) for Anti-jamming Feb 2025 — Jun 2025

- Conducted a heuristic investigation into Anti-jamming through stochastic antenna movement under the supervision of Prof. Weidong Mei.

Projects

Control and Computer Vision for Autonomous Quadcopter System Feb 2025 — Jun 2025

- Developed an automatic quadrotor aircraft for objection detection, route planning, and closed-loop flight control.
- Used `ROS2` and `OpenCV` library to implement originally designed computer vision algorithms for real-time landing area detection.

Design and Visualization of a Complete Single-cycle RV32I CPU Core Jan 2025 — Mar 2025

- Designed and simulated an entire RISCV 32-bit CPU from scratch in `Verilog` for RTL simulation and in `Digital` Software for working principle visualization.
- Supported basic peripherals: GPIOs, IIC, UART, etc.
- Implemented a simple boot ROM in assembly, minimal interrupt service for running a Linux kernel.

Adaptive Markov Entropy Source Encoding Oct 2024 — Nov 2024

- Originally-designed the second-order Markov Adaptive Encoding (AME) to perform source coding of *the Game of Thrones* using `Python` and `Matlab`.
- Evaluated and compared the performance of AME, Huffman and Fano coding.

CNN for Embedded Systems Feb 2024 — May 2024

- Integrated a convolutional neural network (CNN) into an MCU using `C` in `MbedOS`.
- Enabled smart fall detection, body temperature monitoring and real-time data visualization for patients.

Human Voice Recognition Smart Car Sept 2023 — Dec 2023

- Designed and implemented a voice-controlled car on STM32F103 using C standard libraries, supporting actions such as moving forwards/backwards, turning/sliding left/right.
- Led a 4-member team in the project.

Digital Door Lock for Dormitory Sept 2023 — Oct 2023

- Designed and implemented an embedded digital door lock system in `C++` on Nucleo L432KC MCU.
- Developed basic functions include manually setting up password, automatically lock for repeated wrong passwords, OLED message displaying, etc.
- Led a 3-member team in the project.

First Place in "XinTong Cup" Electronic Design Competition Sept 2022 — Oct 2022

- Designed and implemented a 8-key music player using register-based development in `Keil C51` on STC89C52 MCU.
- Developed functions includes single note/chord playing, recording, replay and rewind capability, etc.

Relevant Skills

IT Skills	Latex, Quarto Markdown, Typst, Manim, Github, Microsoft Office.
Programming	`C/C++`, `Python`, `Matlab`, `Verilog`, `Chisel`, `RISCV Assembly`.
Language	Native Chinese, Fluent English.

Awards

Top Academic Scholarship of UESTC (Top 5%) Dec 2023, Dec 2024

China National Scholarship (Top 3%) Dec 2024

First Prize: 7th National College Art Exhibition and Performance Sept 2024