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ENGAGED PROJECTS

RV32I CPU Core for Education *(Jan 2025 — Present)*

- ***Main tools***: `verilog`, `VHDL`, `Digital`, Kicad, iCESuger FPGA
- Simulate an entire RISC-V 32 bit CPU in verilog and `Digital` Software.
- Support basic peripherals such as GPIOs, IIC, UART, VGA, etc.
- Simple boot ROM in assembly, minimal interrupt service for running a Linux kernel.
- Complete PCB design in Kicad (Not finished).

AME Source Coding (*Oct 2024 — Nov 2024*)

- ***Main tools***: `python`, `matlab`
- Final project of **Information Theory** Course.
- Developed a method (Second-order Markov Adapative Approximation, AME) to perform source coding for *the Game of Thrones*. The performance of Huffman and Fano coding was also evaluated.

CNN for Mbed (*Feb 2024 — May 2024*)

- ***Main tools***: `python`, `C++`
- Integrated a Convolutional Neural Network (CNN) into an MCU for smart fall detection for the elderly.
- Realized functions include smart fall detection, body temperature monitoring and real-time data visualization.

A Study of Generalized Fields and Extension to Higher Dimensions (*Oct 2023 — Feb 2024*)

- A theoretical study of generalized natural fields and behaviours in higher dimensions.
- Largely motivated by my tutor Mr. Yidong Liu and my friends and complete by myself.

Human Voice Recognition Smart Car (*Sept 2023 — Dec 2023*)

- ***Main tools***: `C++`, STM32F103C8T6 MCU, etc.
- Led a team of a group of 4 people.
- Built a car with recognition of pre-defined English words to control the movements of a small car. Basic operations include moving forwards and backwards, turning or sliding left and right, etc.

Auto Door Opener for Dormitory (*Sept 2023 — Oct 2023*)

- ***Main tools***: `C++`, Nucleo L432KC MCU, Mbed library, OLED screen, etc.
- This was the final project of the Microelectronic System course.
- Realized opening our dormitory door by simply entering password from a keyboard outside the room (instead of using physical keys). Basic functions include setting up password manually, automatically lock if wrong password is entered over 5 times, display messages on an OLED screen, etc.

"XinTong Cup" Electronic Design Competition: Electronic Keyboard Music Player (*Sept 2022 — Oct 2022*)

- ***Main tools***: `Keil C51`, STC89C52RC MCU, etc.
- Led a small team of a group of 3 people.
- Successfully built a simplified keyboard music player with 8 keys using an 8-bit MCU by ST company and Keil C51 language for register-based development.

- Functionality of the keyboard music player consists: Single note playing, chord playing, recording ability, replay and rewind capability, etc.

ACADEMIC RECORD

Table 1: Detailed scores of core courses (**GPA: 3.88**)

Year	Subject	Score
Year 1	Calculus I/II	91/92
	Linear Algebra	84
	C Programming	95
	Physics I	88
Year 2	Physics II	96
	Signal and Systems	91
	Probability and Statistics	92
	Microelectronic Systems	92
	Embedded Processors	95
	Circuit Analysis and Design	95
	Computer Network	94
	Academic English	89
Year 3	Information Theory	91
	Principles of Communication	95
	Digital Circuit Design	86
	Machine Learning	86
	Stochastic Signal Analysis	82

RELEVANT SKILLS

- **IT Skills**: Latex, (Quarto) Markdown, Typst, Manim, Github, Microsoft Office.
- **Computer Programming**: `C/C++`, `Matlab`, `Python`.
- **Embedded System Programming**: RISCV asm, STM89C5x (Standard lib), Keil C51.
- **Team Work**: Zoom meeting, Notion team, Microsoft team.
- **Language**: No problem in understanding English lectures, fluent Chinese.

OTHERS

- **Learn Everything**: I'm open to think and learn *everything* exist or non-exist on earth.
- **Classical Music Enthusiast**: Violin player in university symphony orchestra, votary of Gustav Mahler and Johann Sebastian Bach.
- **Pure Math Lover**: Pure math (especially Algebraic Geometry and addictive puzzles) occupies me most of the time. Absolute beauty!
- **Badminton Lover**: Sports always refreshes me at any time.
- **Volunteer Work**: Love helping others, over 15 hours of volunteering.