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## ENGAGED PROJECTS

### Movable Antenna (MA) for Anti-interference (*Just start*)

- **Main tools:** matlab.
- A heuristic investigation into Anti-interference through stochastic antenna movement, conducted under the supervision of [Prof. Weidong Mei](#).

### Computer Vision (CV) for Quadrotor Aircraft (*Just start*)

- **Main tools:** matlab, C/C++, python, verilog.
- A group project (6 people) for bare-metal programming for an automatic quadrotor aircraft for objection detection, robotic arm manipulation, and closed-loop flight control.

### 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 Adaptive 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<sup>1</sup> (*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 <sup>2</sup>	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<sup>3</sup>, Github<sup>4</sup>, Microsoft Office.
- **Computer Programming:** C/C++, Matlab, Python.
- **Embedded System Programming:** RISCv assembly, STM89C5x (Standard lib), Keil C51.

- **Math:** Self learned ([Abstract Algebra \(Harvard E-222\)](#)), [Point-set Topology](#), [Measure Theory](#), [Complex Analysis \(MIT 18.04\)](#), [Functional Analysis](#), Elementary [Differential Geometry](#), [Smooth Manifolds](#) (*still learning*). I didn't go too deep in each of these subjects, but I understand their motivation and basic ideas behind them so that I will use fewer time learning these.
- **Team Work:** Zoom meeting, Notion team, Microsoft team.
- **Language:** No problem in understanding English lectures, native Chinese.

## OTHERS

- **Classical Music Enthusiast :** Violin player in UESTC symphony orchestra, votary of legendary composer Gustav Mahler and Johann Sebastian Bach.
- **Badminton Lover :** Sports always refreshes me at any time.
- **Learn Everything :** I'm open to think and learn *everything* exist or non-exist on earth.
- **Volunteer Work :** Love helping others, over 15 hours of volunteering.