Yaoliang BIAN

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Address: University of Science and Technology of China, Hefei, Anhui, China

EDUCATION

University of Science and Technology of China (USTC), Hefei, China Sept. 2022 - Present
Bachelor of Engineering in Electrical Engineering (Expected in July 2026)
Selected courses: Design and Practice of Robot (A+); Foundation of Electronic Design Practice (A-); Overseas Research Program(A); College Physics – Base Experimentation B(88/100); Electronic Technology Experiment; Computer Programming A; Linear Algebra B1; Mathematical Analysis B1

AWARDS & Honors

USTC Sunshine Scholarship (1/49)	2025
USTC Fellowship Undergraduate A-Class Funding (Top 5%)	2023
USTC Sunshine Scholarship (1/45)	2023
Robogame Competition at USTC,2nd Prize (2/39)	2023
Scholarships for Electrical Engineering Program of Excellence (for talented students)	2023
USTC 2022 "Star of Inspiration" Honorary Title (1/45)	2023
"Outstanding Campus Journalist" Honorary Title (Top 1.5%)	2022

RESEARCH & PROJECT EXPERIENCE

Harnessing Multi-Frequency Carriers for Commodity Bluetooth Backscatter Sept.2024-Present
Research Assistant | Advisor: **Prof. Wei Gong** (Department of Computer Science, USTC)
• Designed a backscatter system that is compatible with multi-frequency commercial Bluetooth signals and backscatters them to any Bluetooth channel in a standard Bluetooth frequency hopping manner.
• Built a low-cost edge prototype using off-the-shelf chips, the edge is prototyped with a TI CC2640R2F, a TI CC3200, and an STM32F103RC.
• Conducted end-to-end experiments on an empty second-floor platform, achieved a maximum utilization rate of 97.8% and 98.4% under 8 and 34 carrier channels, which are 8.73x and 34.5x better than FreeRider.

A Survey on Custom Hardware for Deep Reinforcement Learning Jul. 2024 - Sept. 2024
Research Assistant | Advisor: **Prof. Ameer Abdelhadi** (Department of ECE, McMaster University)
• Explored the development of domain-specific architectures for reinforcement learning (RL), highlighting advancements and challenges in implementing RL on specialized hardware.
• Reviewed architectures for accelerating RL algorithms and their key contributions for Internet of things, hardware prefetching and processors; Provided a comprehensive comparison of FPGA and GPU implementations; Explored near-memory computing and state-of-the-art DRL algorithms on custom hardware.
• Concluded with future research directions, including integrating advanced neural network layers in FPGA designs and exploring near-memory computing to further enhance RL capabilities on custom hardware.

Robogame, USTC May 2023 - Oct. 2023
Project Manager | Advisor: **Prof. Huichun Ye** (Department of Engineering, USTC)
• Built a robot with my teammates in USTC's 2023 Robogame. I was responsible for the electrical wiring of the robot chassis and the coding of motion control. Our Robot can independently identify, grab ores of different colors and transport them to the designated area in time
• Won the 2nd prize among 39 teams. (Project code)

18th National College Students' Smart Car Competition, USTC Nov. 2022 - Jul. 2023
Project Manager | Advisor: **Prof. Huichun Ye** (Department of Engineering, USTC)
• Participated in the power relay group of Anhui division. I was responsible for the PCB design of the core boards for the rescue vehicle and the rescued vehicle of the electrical energy relay team.
• Provided help to the team of Shanghai Jiao Tong University in the intelligent vision group of East China Division.

Examining the Influences of Skyrmion Movement Sept. 2022 - Jun. 2023
Research Assistant | Advisor: **Prof. Peng Li** (Department of ECE, USTC)

• Investigated the effect of magnetic crystal anisotropy constant K, geometry on Skyrmion motion
• Explored the effects of varying the one-dimensional Ku field intercept, slope, and the two-dimensional Ku field (adjusting the shape of the wedge) on the motion of Skyrmion; Obtained a series of Skyrmion motions by varying the parameter; Wrote a summary essay.
• Drew conclusions about the associated integral-leakage-ignition model; Summarized, reflected upon and refined the simulation process.

STUDY ABROAD EXPERIENCE

McMaster University, Hamilton, Canada Jul. 2024 - Sept. 2024
McMaster - USTC's Summer Research Internship Program
Relevant Research: A Survey on Custom Hardware for Deep Reinforcement Learning

The University of Texas at Austin, Austin, TX Jan. 2024 - Feb. 2024
International Academy Winter 2024. Software Engineering
Relevant Coursework: Programming in Python and Java, Academic Writing, Oral Communication

Oriel College of Oxford University, Oxford, UK Jul. 2023 - Aug. 2023
Summer Institute 2023. Quantum Computing
Relevant Coursework: Mastered the basics of quantum computing

Warsaw University, Online Jan. 2023 - Feb. 2023
Winter School Program 2023. IT
Relevant Coursework: Engaged in a crash course in R, learned to analyze data with Rstudio and use the data analysis software Orange

SKILLS

Programming: C, C++, Python, Java, R, Verilog
Hardware: nRF52840 SoC, TI CC2640R2F, TI CC3200, FPGA, STM32F103, Raspberry Pi, ATmega8A
Software: Mathematica, MATLAB, Altium Designer, Microsoft Excel, Origin, Wireshark, Vivado, STM32CubeMX, SmartRF Studio 7
Language: Proficient English, Fluent Chinese