

YUAN CAO

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Education

Brown University

Master of Engineering (Electrical and Computer Engineering)

Sep. 2022 – Present

Providence, RI, United States

Chang'an University

Bachelor of Engineering (Electrical Engineering and Its Automation)

Sep. 2018 – Jun. 2022

Xi'an, Shaanxi, China

Professional Experience - Academic

Embedded System for Prosthetic Applications(ESPA)

Brown University(Brain Gate Lab)

Providence, United States

Dec. 2022 – Present

- Engaged in establishing preliminary HID services using the RN4870 Bluetooth chip to enable mouse movement control in diverse environments
- Working on implementing remote Bluetooth control through Redis Streams to allow for the dynamic modification of Bluetooth runtime parameters and initialization of the Bluetooth module via input YAML file

Teaching Assistant of Digital Electronics Systems Design

Brown University

Providence, United States

Oct. 2022 – Jan. 2023, Sep. 2023 – Present

- Helping students comprehend the foundational principles of digital design
- Assisting the teacher in conducting experiments related to Digital Electronics Systems

Development of an Electronic Nose for Environmental Monitoring Applications

University of Windsor(Mitacs Globalink Research Internship)

Jul. 2021 – Oct. 2021

- Proficiently utilized COMSOL for simulations to assess and validate the sensor's performance across various scenarios
- Analyzed data from sensors collected in different environmental conditions and with varying structures, contributing to a better performance and behavior of the sensor

Design of an Intelligent Elevator Measurement and Control System

Chang'an University

Shaanxi, China

Jun. 2021 – Jun. 2022

- Conceptualized and meticulously designed various circuit modules to enable diverse functionalities and regulate the intricate operational logic of the elevator
- Innovatively introduced features such as voice announcements and image display functions, elevating user interaction and usability

Projects

Database, Network and System Design

Nov. 2022

- Implemented a database with create, read, update, and delete functionalities in C, utilizing fine-grained locks for secure multi-threaded access and modification
- Utilized the C language to design and implement the function of client-side, effectively employing the TCP protocol to ensure robust and reliable data transmission with the server
- Designed and implemented a functional Shell program using C, providing features such as user interaction, command parsing, and basic system calls

Particle Motion Simulation

Oct. 2022

- Designed and implemented a particle motion algorithm in C++ to simulate particle movement in a two-dimensional space, allowing customizable behavior through adjustable parameters and visualizing particle motion using the wxWidgets GUI framework

3D Model Reconstruction

Mar. 2021

- Utilized C++ to design a data structure to store information about 3D model points, lines, and surfaces. Based on this, constructed algorithms to accurately reconstruct 3D models. Additionally, developed a GUI interface that enables users to intuitively deconstruct and reconstruct models. Ensured compatibility by implementing the capability to import and read various file formats

Technical Skills

Languages: Python, C/C++, Java, MATLAB

Hardware: MPLAB, Multisim, Altium Designer

Others: Linux, Git, COMSOL, Torch

Honors, Awards and Service

- Provincial innovation training project – Obtained 5000 CNY for project operation fund
- Undergraduate Scholarships (Year 1, 2)