Yuan Cao

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Education

Brown University **Sep. 2022 – Present**
Master of Engineering (Electrical and Computer Engineering) *Providence, RI, United States*

Chang'an University **Sep. 2018 – Jun. 2022**
Bachelor of Engineering (Electrical Engineering) *Xi'an, Shaanxi, China*

Professonial Experience - Academic

Embedded System for Prosthetic Applications(ESPA) **Providence, United States**
Brown University(Brain Gate Lab) *Dec. 2022 – Present*

- Established preliminary HID services using the RN4870 Bluetooth chip, enabling mouse movement control in the Android environment
- Implemented remote Bluetooth control through Redis streams, allowing for ESPA's initialization via input YAML files and dynamic modification of Bluetooth runtime parameters

Teaching Assistant of Digital Electronics Systems Design **Providence, United States**
Brown University *Oct. 2022 – Jan. 2023*

- 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 **Shaanxi,China**
Chang'an University *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 and Network 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

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 project operation fund 5000 YUAN
- Undergraduate Scholarships (Year 1, 2)