# Yuan Cao

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## Education

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

**Chang'an University** **Aug. 2018 – Jul. 2022**
*Bachelor of Engineering (Electrical Engineering and Its Automation)* *Xi'an, Shaanxi, China*

## Professonial Experience - Academic

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

- Equipped ESPA with Bluetooth capabilities to ensure the real-time transmission of information to different devices.
- Implemented remote configuration through Redis Streams to allow for the dynamic modification of ESPA runtime parameters.

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

- Guided students comprehend the foundational principles of digital design.
- Assisted the professor 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 the sensor's performance across various scenarios.
- Analyzed and enhanced data from the sensor that operated in various environmental conditions and with different internal parameter settings, resulting in improved sensor responsiveness.

**Design of an Intelligent Elevator Measurement and Control System** **Shaanxi,China**
*Chang'an University* *Jun. 2021 – Jun. 2022*

- Designed various circuit modules and efficient operational logic for the elevator.
- Introduced features such as speech recognition, audio response and image display functions, elevating user interaction and usability.

## Projects

**Database, Network and System Design** **Oct. 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** **Nov. 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. 2023**

- 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.

## Courses

- Circuit Theory
- Automatic Control Principle
- Power System Analysis
- Power System Automation
- Scientific Programming in C++
- Introduction to Computer Systems

## Technical Skills

**Languages**: Python, C/C++, Java, MATLAB
**Hardware**: Verilog, Multisim, Altium Designer
**Others**: Linux, Git, COMSOL, Torch

## Honors, Awards and Service

- Provincial innovation training project – Obtained 5000 CNY for project operation fund
- Academic Excellence Award
- Course Excellence Award