



GEORGE CHARLES

ELECTRICAL ENGINEER



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Isle of Palms, SC

EDUCATION

B.S.E.E

University of South Carolina, Columbia
2018-2023 (Anticipated Graduation)

H.S. Diploma, PLTW, Engineering

Charleston Charter School for Math and Science
2014-2018

COURSEWORK

- Computer Architecture
- Computer Modeling of Electrical Systems
- Digital Logic Design
- Digital Signal Processing
- Control Systems
- Real Time Systems
- Power Systems Design and Analysis
- Microwaves
- Nuclear Engineering
- Photovoltaics
- Electronics and Microelectronics
- Electromagnetics

SKILLS

C and C++, High Frequency Structure Simulator (HFSS), MATLAB, AUTODESK, SOLIDWORKS, Simulink, JAVA, R, LTSpice (Electrical circuit modeling program), Multisim (circuit simulator), GAANTProject, MIPS, Microsoft Office

ABOUT ME

Upcoming Bachelor of Science graduate in Electrical Engineering seeking an entry level position that will allow me to combine systems engineering knowledge acquired during internship with practical experience in systems integration and commercial product adaptation gained through academic engineering projects. Strong leadership, teamwork and interpersonal skills learned from working in a service industry

WORK HISTORY

Student Intern

Imagine One Technology & Management / Charleston, SC / 2015 – Present

During summers and school breaks, performed a variety of engineering intern rotations and office support functions. Shadowed various mentors throughout the company to learn many facets of corporate operations. Assignments included:

- CAD 3D modeling in support of Mine Resistant Ambush Protected Vehicle (MRAP) components, specifically a table stand for devices
- Review of company produced drawings and manuals against government standards and notations
- Research into AI technologies for facial recognition applications
- HR and administrative support including reception of visitors, answering phones, faxing, Xeroxing, visitor sign-in, managing conference room schedules, and filing
- Mentoring/training in DoD Architecture Framework (DoDAF) modeling, Systems Engineering "V," and Agile development

Shift Leader

VLM Enterprises / Mt. Pleasant, SC / 2018-2021 (Seasonal)

Led both morning set-up and evening take-down crews to perform beach chair and umbrella setups beginning at 5:30 a.m. and take downs in the evenings. Reviewed hundreds of daily customer orders. Ensured rentals were properly loaded and marked for delivery and dispatched set-up teams. Ensured equipment and delivery trucks were in good working order. Interfaced with customers, responsible for taking orders, promoting additional products, and resolving any customer issues or concerns



SIGNIFICANT ENGINEERING PROJECTS

Senior Capstone Project – Head Operated Wheelchair

Problem Statement: Build a wheelchair for a user without the use of her arms and legs to be controlled with a head operated device, preferably not requiring use of her mouth

Project Synopsis: With two interdisciplinary teams, we designed a head operated wheelchair. Due to COVID supply chain issues, we had to modify an existing, donated Permobil chair base as well as integrate and troubleshoot both on-hand and newly acquired equipment and parts from multiple vendors. We converted a “sip and puff” mouth controller to a head array controller using sensor pads, electrostatic switches, and an additional microcontroller. We designed it so that each sensor had two modes, “double tap” and “tap and hold”, to expand her functionality to include not only directional drive control but seat adjustment. We integrated a back-up camera and multiple safety systems, some of which required different levels of sensitivity or the ability to be disabled over rougher surfaces like grass and gravel. We conducted extensive user testing, making many modifications along the way to accommodate the user’s neck strength and agility. The project involved close coordination with the mechanical engineering team on the physical structure of the chair. The project necessitated extensive research into the technical documents of the original chair and investigation into ways to access the code of the chair to modify it. We were also required to produce many project management and engineering artifacts such as a project management plan, a work breakdown structure (WBS), a tech manual, and system diagrams to show how individual subsystems were connected. A major take away from the project was the need to be flexible and able to adapt design solutions when things don’t work as anticipated or parts aren’t available. Probably, my most profound project lesson learned was the importance of being of service to others and the value of engineering solutions to improve lives.

Junior Project – Self Driving Car

Problem Statement: Design a self-driving car and race other cars

Project Synopsis: With two electrical engineering teams, we designed a self-driving car. I worked on the steering control team. We used magnetic sensing to control steering by employing inductors to track the magnetic field generated from a guide wire. We designed a closed loop control system that took average information from two sensors; considered the steering model geometry of car, differences between sensors, and corrected the angle of the steering axel to drive back over the guide wire. Our system also included state switching for drive state, wait state, and stop state and safety functions such as emergency stopping and course correction. Our project involved several circuit elements. We utilized IR sensing technology to enable the car to track of certain markings on floor to update its current position on the track through various sections. We used amplifiers in the circuit to boost the signal generated from the two inductive sensors. All computing was achieved through use of a microcontroller and “C” and “C++” coding. The project required collaboration with a secondary electrical engineering team that handled drive functions.