Mohammad Mballo

Career/Research Interest

To pursue a PhD in Robotics, Optoelectronics, Computer vision, AI, or Analog Electronics

Positions Held

2021 - 2022 Founder and President of QCC ASME Student Design Team

2022 - 2023 Senator-Elect of QCC Student Government Association(SGA)

Technical Skills

- **Programming:** Python, C++, Matlab
- **Computer Aided design(CAD):** Multisim, Fusion 360, TinkerCad
- **Hardware:** Arduino
- **Instrumentation:**Oscilloscope, Multimeters, Waveforms

Awards

- Secured funding ($1500) and sponsorship for QCC ASME Student Design Team 2022
- Selected as a National Science Foundation(NSF) S-STEM Smart Energy Scholar 2022
- Student Government Association(SGA) Outstanding Leadership Award, QCC Award Ceremony 2022-2023
- Dean's List

Education

University of Virginia(UVA) (Exp Grad: May/2026) CGPA:3.72/4.00

Queensborough Community college(QCC) Spring 2023

Projects

Voice Recognizer April-May 2024

- Using Python, implemented hyper-parameter optimization to improve classification accuracy of the voice recognizer with a near perfect classification accuracy
- Along with 2 other students, created a program that uses labeled voice samples from different people as training data, to classify a speaker's Identity using a sample of their voice.

Deustch-Josza Quantum Algorythm Dec 2023

- Utilized IBM Q platform, to write a python scrypt that constructs a balanced and constant oracle, using Quiskit
- Quantum circuit easily expandable by reassigning number of Qubits to pass
- Proved Quantum advantage by using a single query to determine whether the passed oracle is balanced or constant

DC to DC Boost Converter Oct-Nov 2023

- Utilised Multisim Software to design circuit capable of stepping up input 5VDC to output 13 VDC
- Utilized Ultiboard software to design PCB layout, which was then manufactured by a third-party
- Soldered physical components onto designed PCB to experimental test utilizing NI WaveForms oscilloscope, in conjunction with AD2 hardware

FIRST Rapid React Competition(mentor) April 2022

- Utilized Labview software along with MVB high school students to program drivetrain of Robot
- With a team of MVB Students, wired roboRIO, motor controllers, along with other necessary electrical components

ASME H2GO design Project(team lead) Nov 2021/March 2022

- Worked on designing a prototype vehicle propelled solely by water using a waterwheel for propulsion
- Implemented Vex microcontroller motors for steering components
- Utilized Onshape CAD software to draft design

Service

- Martin Van Buren High school FIRST Robotics Team mentor 2022, FIRST
- Member of Ratification/Allocation committee 2022, QCC Student Government
- Student representative of the Committee on Assessment and Institutional Effectiveness (AIE)2022, QCC
- Treasurer of Keys Club, Forest Hills High School, 2020-2021

Affiliations/Clubs

- National Society of Black Engineers(NSBE), UVA 2023
- Science Research Alliance(SRA), QCC 2022-23
- American Society of Mechanical Engineers(ASME), 2022

Coursework

- C++ Design and Implementation // Intro to programming(Python) // CAD for Electrical Engineers
- Applied Circuits // Digital Logic Design // Quantum for Engineers
- Differential Equations // General Chemistry 1 & 2