Aamir Husain

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C/C++ • ROS • Python • Robotics • MATLAB • SQL • SolidWorks • EAGLE • HTML • CSS • PHP • JQuery • Circuit Design • Mechatronics • Biomedical Engineering • Technical Writing • 3D Printing • Machine Learning • Artificial Intelligence • Neural Networks • Mathematica • Controls

Master of Science: Robotics
Northwestern University
Sep 2017 - Dec 2018

Bachelor of Science: Biomedical Engineering
George Washington University (Honors Program)
Aug 2011 - May 2015

Study Abroad Exchange Program
Boğaziçi Üniversitesi, Istanbul
Sep 2013 - Jan 2014

Selected Projects

Argo: An Autonomous Suitcase | Winter Project

Jan - May 2018

- Designed and built a carry-on sized suitcase that uses AR-tags to localize a target and follow it at an average walking speed
- Multiple PID controllers to create smooth acceleration and turning at any speed
- ROS on board to communicate with the motors, camera, Raspberry Pi Model 3, and a RoboClaw motor controller

DC Motor Controller | Low Level Motor Control

Jan - May 2018

- Created a closed loop feedback system for a brushed DC motor for current control and position control
- Programming in C to configure low level hardware (PIC32MX250F128B microcontroller, H-bridge, DAC, current sensor)
- Built a MATLAB interface to read encoder position and current draw, set speed and direction, control position, and send a trajectory to follow

Inspector Baxter | Robotic Control with ROS

Nov - Dec 2017

- Wrote a program that allowed Rethink Robotics' *Baxter* to learn objects and retrieve them via speech commands
- Object information was gathered using point cloud data from a *Microsoft Kinect* and then sent to a ROS node to compute the inverse kinematics to move Baxter's arm to the location of the object's centroid
- Extensive use of ROS, Python, git control, and some C++

Techtiles: Washable Biometrics in Clothing | Capstone Senior Design

Jan 2014 - May 2015

- Designed a biometric shirt incorporating a fabric stretch sensor, accelerometer, and 3 lead ECG to measure heart rate, breathing rate, steps taken, distance traveled and energy expended
- End-to-End project using Eagle, AutoCAD, 3D printing, C++, Arduino, PSPICE, and filter design
- Second place in Pelton Senior Design Competition

Work Experience

Developer & Consultant | FAST Enterprises

Jan 2014 - May 2015
Washington, DC

- Worked on the DC government's Modernization Integrated Tax System (MITS) Project which implemented GenTax, a streamlined tax management software solution customized for the District
- Developed online tax forms and implemented DC's tax laws using SQL, Microsoft SQL Server, and .NET
- Consulted with DC employees on how to implement state-specific tax laws in a user-friendly way

Research Assistant | GWU Nano Medicine & Tissue Engineering Lab

May 2014 - Dec 2014
Washington, DC

- Designed a new 3D-printing tray for more consistent, high-quality samples of scaffolds for osteochondral stem cells
- Familiarity with a SLA 3D printer and used it to study stem cell proliferation, adhesion, and viability

R & D Intern | SpineWave, Inc.

Jun 2013 - Aug 2013
Shelton, CT

- Independent project of designing a prototype housing for a spinal prosthetic implant gun (StaxX XD) which included force and distance sensors to measure human effort and material stability when pulling the trigger on the device
- Hands on experience with designing and building circuits (amplifiers, Wheatstone bridge difference measurement), and extensive use of SolidWorks and high quality 3D printing

Leadership & Volunteering

VP of Marketing | GW Class Council

Aug 2012 - May 2015
Washington, DC

- Promote student leadership and contribute to campus life by planning events ranging from fundraisers, MCAT prep panels, dance competitions, and food giveaways
- As VP of marketing, increased student awareness of CC by reaching out to over 12,000 students and improve Class Council's awareness on campus by over 300%
- Created a new flagship holiday event and led two others, each costing over $7,000

Content Team | TEDxFoggyBottom

Sep 2014 - Apr 2015
Washington, DC

- Selected speakers for one of the largest TEDx events in the country, reaching out to locals in the DMV area to showcase the incredible talent near Washington, DC
- Worked with a team of 8 fellow undergraduates over the course of a year and coordinated with several other teams of the TEDx cohort