Ali Toyserkani

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Work Experience

Additive Manufacturing Laboratory *Dec 2016 – Present*

Research Assistant | Waterloo, ON

- Developing a feedback control response algorithm to improve 3D printer's manufacturing quality while maintaining speed
- Implementing a big-data processing system with image detection and various sensors to analyze 5 GB/s of raw data using OpenCV
- Conducting quality analyzation tests for 3D printed samples under various parameters and comparing data for future publications

Fluid Mechanics Research Laboratory *Jul 2016 – March 2017*

Educational Outreach Intern | Waterloo, ON

- Used Arduino UNO, 555-timers, amplifiers, and the power of IoT to emulate a changing human voice
- Created mechanical models of the human vocal tract using soft plastics and rubber silicone material to teach youth about human phonation
- Visited multiple educational districts to showcase hardware and coordinate different activities regarding linguistics and sound

Projects

ExtensaArm *C/C++, RobotC, SolidWorks, AutoCAD*

Term Project

- Constructed a multidisciplinary robotic arm with 4 by 1 degrees of freedom, mounted with ultrasonic, colour, touch, and sound sensors
- User can perform a task once, and it will then be able to replicate that specific task autonomously as many times as required
- Modelled the arm mechanically to suit the use of an average consumer (easy to use, many interaction tools, simple assembly, etc.)

Autonomous Mars Rover *Arduino, Altium, DipTrace, Soldering, Hardware Components*

UW Robotics Design Team

- Autonomous mars rover with the ability to maneuver tough terrain, extract and analyze soil, move objects, and communicate with a base station
- Working on an electrical harness, chassis grounding, power distribution, and CAN communication to accommodate electromechanical systems
- Creating a custom 24V battery to provide system power, mounted with current, pressure, and temperature sensors to trigger safety relays

Interactive Physics Simulator *Java*

Personal

- Created a 2D user-prompted collision simulation program with tools to numerically analyze multi-object impacts
- Users can insert/remove dynamic or static shapes, either in real time or paused, as well as toggle information and change multiple UI settings
- Executed the physics modelling by implementing matrix computation using linear algebra, calculus and kinematics

shYft *HTML/CSS, JavaScript, Node.js, Objective C, Firebase*

HACKference 2016 **:** *Best Workforce Hack, Top 10 Overall*

- Built a scheduling platform where employees can seamlessly view shift schedule, contact managers, change availability, and check financials
- Platform will automatically produce a weekly schedule based on employee availability and role, a process which is mainly conducted manually
- Allows employees to interchange and book off work shifts, without direct to-store manager contact
- Worked on the back-end, including connecting Firebase functionality with the front-end and creating accurate weekly calenders

Education

BASc Candidate, Honours Mechatronics Engineering *Class of 2021 (Expected)*

University of Waterloo

- *Academic Representative*: Data Structures & Algorithms (MTE 140) **----** *Clubs*: Intramural Soccer, Engineering Society, Poker Club

Skills

- **Competent with:** C/C++, Java, Arduino, SolidWorks, AutoCAD, Machining Tools, Prototyping, Soldering
- **Experienced with:** Python, HTML/CSS, PCB Design (Altium & DipTrace), Troubleshooting, Sensors, Statistics
- **Familiar with:** ROS, C#, JavaScript, Objective C, GD&T, Raspberry Pi, MATLAB
- Excellent communication, problem solving and collaboration skills and ability to work independently

Extracurricular Activities

- **Finance:** Top 10 at ICDC (International Career Development Conference) for DECA Stock Market Investing Challenge
- **Track & Field:** 2nd best 4x100m Relay Team in West Ontario (OFSAA), 2014-15 School MVP
- **Piano:** Performed in 4 small and local community events around the Kitchener/Waterloo region