

# MAHMUBUL HOQUE

Mechatronics Engineer

University of Waterloo, Graduate 2018

## Contact Information

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## Technical Skillset

### Firmware/Hardware

- Rapid Prototyping for Proof of Concept
- IC Programming | Arduino, STMicro, PIC
- IDE | iAR Embedded, Atmel Studio, MPLab
- Communication | SPI, I2C, UART, USB
- Control System Design | PID, State Space
- Use of Matlab, Simulink, and LabVIEW
- Test Automation for Data Acquisition/Analysis

### Electrical

- Mixed Signal Electronic Design | LTSpice
- Circuit Optimization and PCB Testing
- Schematic Capture | Altium, OrCAD
- Test | Oscilloscope, DMM, PSU, Logic Analyzer

### Mechanical

- CAD Modelling | AutoCAD, SolidWorks, Catia
- Mechanical Analysis | FEA, Materials, Thermal
- Manufacturing Design | Six Sigma, Lean
- Design of Electromechanical Systems

### Personable

- Strong Team Leadership
- Positive Client Interactions
- Effective Project Management

## Work Experience

### RMF Design | Hardware/Firmware Engineer

May 2018 - Present

- Responsible for hardware design, firmware development, and design validation of products
- Authored products in medical, automotive, industrial, and commercial industries

### Stantec Consulting | Electrical Design Engineer

May 2017 - August 2017

- Designed Revit electrical schematics, accounting for lighting, security, and acoustics
- Analyzed 3 Phase, High voltage, AC power and proper transformer rating, adhering to CSA

### Tesla | Prototype Engineer

August 2016 - December 2016

- Designed test setups to validate integrity of new electric vehicle concepts -> Model 3, Tesla Truck
- Circuit Design, Board Testing, Signal Processing, Hardware Integration, and Controls Simulations

## Projects

### Bus Safety System (Work Project)

- System warns pedestrians of oncoming busses via CAN inputs and audio/visual outputs
- Developed automotive rated board with electrical isolation and ESD protection
- Programmed on Arduino IDE, prioritizing maintainability and development time
- Circuit Design, PCB Fabrication, Firmware Development, and System Testing

### Smart Lock System (Personal Project)

- Developed automated door lock to eliminate need for peripherals
- Rendered enclosure in Solidworks, optimised via mech analysis; FEA, thermal, impulse, shock
- Design circuit to interface with low voltage peripherals, minimizing power usage
- Scripted Python based facial + voice recognition, while accounting for fail safes and security
- Product Design and Manufacturing, Circuit Testing, Mechanical Design, and Software

### Virtual Fitting (Final Year Project)

- Developed product to eliminate fitting issues and facilitate online clothes shopping
- Lead in deciding appropriate hardware, as well as designing PDU with CSA approval and budget
- Designed product enclosure, considering visual appeal and mass/thermal distribution
- Scripted AR to capture live body dimensions and dynamically overlay clothes
- Product Design, Hardware Testing, Circuit Design, Team Management, and VR Simulations

## Education

### Bachelor of Applied Sciences, Waterloo University

- Mechatronics Engineering, 2018, Honours
- Minor in Cognitive Sciences, 2018

## Interests & Activities

- Racket sports
- Space travel and observation
- Able to make minute rice in 56 seconds