# Taha Malik

Mechanical Engineering Graduate

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t5malik.github.io

## SKILLS

**Mechanical & Design**
SOLIDWORKS, Inventor, CATIA, AutoCAD, HyperWorks, KeyShot, DFMA, FEA, Tolerance Analysis, GD&T, Drafting

**Hardware**
Arduino, Motors, Soldering, Rapid Prototyping, Sensors & Instrumentation, Machine/Power Tools, CAN

**Manufacturing**
DOE, RCA, Kaizen, APQP, FMEA, Six Sigma, SPC, 5S, PPAP, Lean Manufacturing

## EXPERIENCE

**Able Innovations**- *Product Development Intern* June – September 2020

- Completed detailed product design of primary drivetrain and subassemblies for automated patient transfer device
- Developed open differential gear train with linear compliance to create variable drive rack & pinion system
- Improved manufacturability of parts by reducing number of fasteners, using standardized parts, developing modular assemblies, and designing for effective joining
- Followed GD&T principles to develop engineering drawings of parts and assemblies

*Skill Development: Product Development, CAD Modelling, DFMA, Engineering Design Process*

**Self Employed** – *Freelance Product Design* May – September 2020

- Oversaw design of mechanical & electrical systems from idea generation to completion
- Developed requirements and executed on test plans to handoff deliverables ahead of schedule
- Manufactured and assembled prototypes for product evaluation and quality control
- Created sketches, engineering drawings, and renderings of full assemblies & individual parts

*Skill Development: Business Management, Effective Communication, UX/UI Design*

**Bionik Laboratories** – *Hardware Engineering Intern* September – December 2019

- Collaborated with industrial design team to develop electro-mechanical prototype of neurorehabilitation robot used in design evaluation and testing
- Designed motor components, conducted FEA in SolidWorks and communicated with suppliers to ensure accurate parts
- Developed test plan to grade BLDC motors and classify based on performance under medical grade safety standards

*Skill Development: Hardware Debugging, Physical Prototyping, Electrical Testing, Medical Device Standards*

**Tesla Motors** – *Quality Engineering Intern* January – April 2019

- Completed Root Cause Analysis to rectify quality issues on all Tesla models
- Introduced defect tracking Java app to gain visibility on throughput rate
- Used Continuous Improvement principles to decrease cycle times by 25%
- Eliminated oil defects by performing FTIR tests to identify source of issues
- Designed and fabricated sealer quality tools saving $11,000 annually

*Skill Development: Problem Solving, Manufacturing Fundamentals*

**Mitchell Plastics** – *Project Engineering Intern* May – August 2018

- Managed injection moulding process for Toyota Rav4 by training workers, designing packaging, and validating assembly procedures
- Formed part storage and purge system to better utilize warehouse space
- Used VBA to streamline machine trial process from program summary

*Skill Development: Project Management, Plastic Manufacturing*

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## EDUCATION

**University of Waterloo** – *Mechanical Engineering Graduate* September 2016 – April 2021

Bachelor of Applied Science

- Option in Biomechanics
- Relevant Courses
  - ME 322/423 (Mechanical Design 1 & 2)
  - ME 481/482 (Capstone Project)
  - ME 559 (Finite Element Methods)
  - ME 555 (Computer Aided Design)
  - ME 340 (Manufacturing Processes)
  - ME 598 (Engineering Biomechanics)
  - SYDE 548 (User Centred Design Methods)

## PROJECTS

### Minimalist Lower Limb Exoskeleton

- Provides walking assistance and neurorehabilitation to users with an Incomplete Spinal Cord Injury who have limited motor control of ankle joint
- Uses sensors to determine user position in gait cycle and applies required torque through an active actuation device
- Implementation of passive support structures to facilitate motion in plantarflexion/dorsiflexion with tuneable support along subtalar axis
- Complies with regulatory standard 890.3480 (Powered Exoskeleton) and safety standard ISO 13482 (Personal Care Robot)

### Custom 3D Printer

- Used online and text resources to build functional 3D printer from scratch
- Modified community source code to work with printer
- Print accuracy of +/- 0.1mm and ability to print in PLA, PETG, and ABS

### Android App Development

- Developed "*World Exploring*" Harry Potter adventure game with over 10,000 downloads
- Created fitness tracking app to track user progress, and suggest workouts with recommended weights

## INTERESTS

Environmentally Sustainable Technologies, Medical Devices, Product Design and Research, Basketball, Fitness, Photography, Reading, Woodworking, UWAFT (UW Alternative Fuels Team)