Saksham Malhotra

Mechatronics Engineering Graduate | University of Waterloo | 2021

(647) 309-3852
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HARDWARE EXPERIENCE

Lab Assistant, *Velocity Incubator (University of Waterloo)* *June 2020 – Aug 2020*

- Completely remote internship during the COVID-19 pandemic
- Created SOPs and safety documentation for various lab stations used by start-ups at Velocity
- Developed 3D floor plan models of the workspace in SolidWorks as assemblies with corresponding drawings for COVID-19 safety maps

Mechanical Engineering Assistant, *Smarter Alloys* *Jan 2020 – April 2020*

- Designed and developed miniature thermal actuators for clients using shape memory alloys (NiTi) and conducted finite element analysis (FEA) in Fusion 360
- Conducted controlled experiments using laser processing and thermal treatments to analyzing the transformation behaviour of shape memory materials
- Designed mechanical fixtures using Fusion 360, along with electrical control boxes, for in-house lasers to increase their efficiency and safety

Manufacturing Engineering Intern, *Formlabs* *May 2019 – Aug 2019*

- Used SolidWorks to design, prototype and build multiple jigs to test laser safety by collecting light transmission data for customer facing parts of the Form 3 printer
- Validated laser safety testing jigs by conducting a Gage R&R study to establish a baseline for instrument and operator variation
- Organized and managed the in-depth quality control initiative for the first 300 customer-ready Form 3 printers during production ramp
- Worked with contract manufacturers by providing feedback from the quality control effort resulting in an 80% increase in first pass yield of the Form 3 printers

Instrument Engineer, *Nicoya Lifesciences* *Oct 2018 – Dec 2018*

- Transitioned the OpenSPR medical instrument from the development to manufacturing stage by creating detailed work instructions and a bill of materials
- Decreased manufacturing time of the OpenSPR by 60% by improving tolerances of the assembly design features
- Developed a comprehensive production schedule to provide accurate delivery times for new customers based on supplier lead times
- Optimized the manufacturing space and process flow resulting in a 200% increase in production

Mechatronics Engineering Intern, RYSE (Formerly *AXIS Inc.)* *July 2017 – Aug 2017*

- Modeled a test jig in SolidWorks before building and wiring it to measure output current from a solar panel under various lighting conditions
- Tested and repaired various electronic components including a capacitive touch sensor and the main control board for the AXIS Gear
- Tested and assisted with the improvement of battery charging algorithm using UART debugging

TOOLS

SolidWorks

Fusion 360 (w/ FEA)

AutoCAD

MATLAB

ePDM

Asana

Atlassian (Jira/Confluence)

Amazon AWS

MySQL, Microsoft SQL

MECHANICAL SKILLS

Mechanical Design

Lean Manufacturing

SLA & FDM 3D Printing

Machining

Laser Cutting

Laser Processing

Soldering

PROGRAMMING LANGUAGES

C++, Java

Python

Linux, Bash Scripting

HTML, CSS, JS

EDUCATION

Degree: Bachelor of Applied Science

Major: Mechatronics Engineering

Institution: University of Waterloo

Grad Date: April 2021

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SOFTWARE EXPERIENCE

Software Developer, Bluejay Networks *Dec 2017 – Apr 2018*

- Ported the UI component of an internal product to an Amazon AWS EC2 Linux instance and configured it using Apache Tomcat
- Created bash scripts in Linux to automate and optimize import and export of as2files
- Used Cron to implement and monitor the automation process

Full Stack Developer, Bark 'n Yapp *May 2017 – July 2017*

- Created a landing page for the company's main website using HTML, CSS and JavaScript
- Tested and modified various parts of the website and the mobile app including a verification system for new users, a payment system for vendors, and features for the user profile
- Used MySQL to assist with debugging and documentation of file paths

PROJECTS

Smart Knee Brace for Osteoarthritis, *University of Waterloo* *July 2020 – April 2021*

- Creating a smart unloader knee brace prototype to relieve pain for patients suffering from multicompartmental and unicompartmental Osteoarthritis
- Designed the brace in SolidWorks and built a functional prototype using aluminum sheet metal, custom 3D printed components, a spring and cable system, IMU sensors and motor system.
- Adopted a Kanban style of project management to manage the team and build the brace with minimal resources and budget during the COVID-19 pandemic
- Used Blender to create and edit marketing and demo videos for the brace

Portfolio Website, *Personal* *Apr 2021 – Present*

- Programming a personal portfolio website using HTML, CSS & Javascript and hosting it on github pages: https://malhotra-saksham.github.io/

Security Camera (Stewart Platform), *University of Waterloo* *Sep 2019 – Dec 2019*

- Modelled (MATLAB) and designed (SolidWorks) a security camera system built upon the foundation and principles of a Stewart Platform
- Programmed the motor moves routine to match a MATLAB inverse kinematics model in C++ on a STM32 Nucleo Board

3D Printed Ukulele, *Personal* *July 2019*

- Redesigned and 3D printed a soprano ukulele in multiple parts using an SLA 3D printer

Tetris, *University of Waterloo* *June 2018*

- Programmed the classic game of Tetris on a KeilMCB1700 boarding using C#

Mentor/Control Systems Team Lead, *F.I.R.S.T. Robotics* *Sep 2014 – Sep 2017*

- Designed and built the electronics control panel for a robot for high school robotics team

PREVIOUS NOTABLE ACADEMIC COURSE

MEMS Fabrication

Digital Control Application

Fluid Dynamics

Fluid Power Systems

Thermodynamics

Power Electronics

Real Time Systems

Electromechanical Machine Design

SPOKEN LANGUAGES

English

Hindi/Punjabi

AWARDS

President's Experiential Award (*2021*)
University of Waterloo

President's International Experience Award (*2020*)
University of Waterloo

President's Scholarship of Distinction (*2017*)
University of Waterloo

Leadership Award (*2016*)
Gordon Graydon Memorial Secondary School

INTERESTS

Ultimate Frisbee

Basketball

Running

Ukulele

Piano

Gaming