JATAN BHATT

MECHATRONICS ENGINEERING CO-OP, YEAR 3

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EXPERIENCE

SNC LAVALIN (NUCLEAR)

June 2018 - August 2018

Instrumentation and Controls Engineering Intern

- Worked on nuclear fuel channel inspection tooling (NDE).
- Created custom SQL based database for practical training purposes.
- Analyzed performance metrics to provide insight on possibilities for future improvement.

FIRST ROBOTICS (TEAM 1241)

Mechanical Design Alumni Mentor *September 2016 - Present*

- Mentored students by guiding them through the structured design process.
- Applied University level physics in order to calculate specifications such as:
  - Gearbox ratios, stall load, current draw
- Reduced a 1 hour task to 2 minutes by deriving calculations and implementing them in excel.

Mechanical Design and Manufacturing Team Lead *September 2010 - June 2016*

- Spearheaded design and manufacturing efforts to optimize and detail design several different robot subassemblies for high school robotics team based on unique game-based challenges.
- Projects included design and fabrication of :
  - Custom drivetrain gearboxes to satsify a predetermined linear speed while ensuring motors do not stall under load
  - Pneumatically actuated and spring loaded mechanisms used to manipulate a variety of game pieces
  - Arms and linkages as well as their gearboxes used move loads at a certain angular speed
- Rapid prototyping using 3D printing and CNC Mills.
- Led a sub-team and delegated work to ensure the tight 6-week deadline.
- Optimized design for manufacturing and assembly with a focus on quick machining times and easy maintenance.

SMART POWERBAR

July 2017

Personal Project

- Functional IoT prototype utilizing Particle Photon to control a relay over WiFi.
- Remotely controlled using iPhone or Mac.
- Integration with Apple HomeKit using Node.js

IMPACT PROJECT

September 2016 - December 2016

Team Lead

- Designed a solution featuring a custom offset 4-bar linkage which allows users to eat their meals at an ergonomic height and stows away when not needed.
- Iterative design based on feedback from peers and industry experts.
- Chosen as “Best Design” out of 1000 first year engineering students and is currently being used at St. Peter’s Senior home in Hamilton

AWARDS

2017	2nd/54 Teams	McMaster Engineering Competition Junior Design
2017	Provincial	Ontario Engineering Competition Junior Deisgn
2016	1st/22 Teams	McMaster Engineering Competition Junior Design
2016	1st/252 Teams	McMaster Engineering IMPACT Project
2016	International	FIRST Robotics Competition World Championship Division Finalists
2016	Inner Team	Platinum Award - Outstanding Student
2015	Inner Team	Innovation Award
2013	International	FIRST Robotics Competition World Champions

COURSEWORK

SOFTWARE

- Software Development
- Data Structures, Algorithims
- Embedded Systems Design

ELECTRICAL

- Analog and Digital Circuits
- Signals and Systems
- Electricity and Magnetism
- Electrical Circuits and Power

MECHANICAL

- Statics
- Dynamics
- Thermal Systems Design

SKILLS

SOFTWARE

- C/Embedded C
- Python
- Bash Scripting (UNIX Shell)
- MATLAB
- Git
- Microsoft Office
- SQL

DESIGN

- Autodesk Inventor
- AutoCAD
- MultiSim (Schematic design)
- GrabCAD Workbench
- SolidWorks
- KeyShot (3D rendering)

ELECTRICAL

- Microcontrollers
  - Arduino
  - Particle Photon
  - STM32L (ARM Cortex)
- Oscilloscope/Power Supplies
- Soldering
- Breadboard prototyping

MANFACTURING

- CNC
- 3D Printing
- Lathe and Mill
- Sheet Metal
- Hand and Power Tools