KAARTHIC PULOGARAJAH

MECHANICAL ENGINEERING

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Summary

- Proficiency in **SolidWorks**, **PLC Programming** (IEC 61131-3), **Creo Parametric/Pro E**, and Microsoft Office gained in a workplace environment
- Expertise in **MATLAB**, SolidWorks surface modelling, **Arduino**, **C/C++**, and HTML/CSS acquired through extensive personal projects
- Strong analytic and problem solving skills developed while pursuing complex and challenging projects

Employment

Alcohol Countermeasure Systems Inc.
Toronto, ON

Mechatronics Engineering Student
Jan 2018 to Apr 2018

- Designed column protection device to protect column from damage using **SolidWorks sheet metal**; device was successfully produced and installed
  Created and updated detailed engineering drawings of new and existing parts for manufacturing
- Developed PLC software using **Structured Text** and **Ladder Diagrams** to control electromechanical devices—mass flow controllers, peristaltic pumps, and solenoid valves
- Programmed PLC to control breathalyzer calibration machine capable of simulating human breathing

ESI Robotics and Automation
Toronto, ON

Robotics Designer
May 2017 to Aug 2017

- Performed **FEA** of robot components and created an engineering report outlining observations and recommendations
- Rapidly prototyped robot parts using 3D printers to evaluate and improve designs
- Designed and 3D printed tensioning device to tighten timing belt mechanism using **Creo Parametric/Pro E**
- Devised system to secure batteries to robot in a modular approach

Projects

Airplane Takeoff Trajectory
Mar 2018 to Apr 2018

- Conducted investigation into commerical aircraft and takeoff protocols to produce trajectory of takeoff
- Used techniques of calculus, linear algebra, and physics to create mathematical model of flight path
- Wrote **MATLAB** script to generate takeoff trajectory and calculate distance to aircraft

1315-MH Wind Tunnel
Sep 2015 to Jan 2016

- Integrated differential pressure sensor with **Arduino** to measure wind speed inside tunnel
- Designed frame of wind tunnel to hold force and wind speed sensors
- Co-authored a comprehensive proposal describing functionality, costs, and design of how to build wind tunnel
- Produced a mathematical model to relate sensor readings to true wind speed using experimental data

Planets Orbiting Simulation
Jul 2017 to Aug 2017

- Utilized **MATLAB** to create accurate simulation of nine planets orbiting the sun and calculate distance between planets
- Applied knowledge of parametric equations and rotation matrices to draw and rotate elliptical orbits

SolidWorks Surface Modelling
Jan 2018 to Feb 2018

- Used **SolidWorks** surface modelling features to model set of animal shaped tea infusers