# KAARTHIC PULOGARAJAH

## 2B MECHANICAL ENGINEERING

## Summary

- Proficiency in **SolidWorks**, **PLC Programming**, and **Creo Parametric** gained in a workplace environment
- Expertise in **MATLAB**, SolidWorks surface modelling, **Arduino**, **C/C++**, and HTML/CSS acquired through extensive personal projects
- Exceptional teamwork and communication skills obtained through design competitions and tutoring
- Strong analytic and problem solving skills developed while pursuing complex and challenging projects

## Contact


kaarthicp@hotmail.com
kaarthicp.me
647-870-5145
linkedin.com/in/kaarthicp
KaarthicPulogarajah


## Awards

University of Toronto ·
### 3rd place University of Toronto High School Design Competition
Created Rube Goldberg machine to extinguish a flame using only junk materials

International Taekwondo Federation ·
### Black belt in Taekwondo

DECA Ontario · **DECA Provincial Medallist**

University of Waterloo ·
### Math Contests - Distinction

## Education

### University of Waterloo
BASc Mechanical Engineering 2021
Relevant Courses: ME 212 Kinematics

## Activities

### The Reckoner of MGCI · Editorial Writer
Authored critical editorial articles relevant to school population

### Youth Against Drugs ·
Anti-Substance Abuse Advocate
Raised awareness for substance abuse through school wide events

## Employment

### Alcohol Countermeasure Systems Inc.
Toronto, ON
Mechatronics Engineer
Jan 2018 to Apr 2018

- Developed PLC software using **Structured Text** and **Ladder Diagrams** to control electromechanical devices-mass flow controllers, peristaltic pumps, solenoid valves
- Programmed PLC to control breathalyzer calibration machine capable of simulating human breathing
- Designed column protection device to protect production floor using **SolidWorks**
- Created and updated engineering drawings of new and existing parts for manufacturing

### ESI Robotics and Automation
Toronto, ON
Robotics Designer
May 2017 to Aug 2017

- Performed **FEA** of robot components and created a report outlining observations and recommendations
- Designed and **3D printed** tensioning device to tighten timing belt mechanism using **Creo Parametric**
- Devised system to secure batteries to robot in a modular approach
- Assembled robots quickly and efficiently to meet deadline of delivering robots for tradeshow

### Educare Tutoring
Toronto, ON
Math and Science Tutor
Oct 2015 to Jun 2016

- Reinforced and improved middle school and high school students' understanding of core concepts in various subjects
- Developed strategies and schedules with each student to focus on long-term and short-term goals
- Gained professional communication experience by discussing strategies and plans with parents

## 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

- 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
- Integrated differential pressure sensor with **Arduino** to measure wind speed inside 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

### Formula Motorsports
Sep 2016 to Apr 2017

- Designed chain guard on **SolidWorks** to be machined and used to protect chain on 2017 FSAE competition car
- Machined FSAE car components using lathe and ensured parts were within design specification

### SolidWorks Surface Modelling
Jan 2018 to Feb 2018

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