# Connor Alan Craigie

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**OBJECTIVE:** Obtain a full time position in Computer Science or Robotics Engineering
**WEBSITE PORTFOLIO:** 17craigiec.github.io

## EDUCATION:

**Worcester Polytechnic Institute (WPI),** *Worcester, MA*
**Bachelor of Science in Robotics Engineering & Minor in Computer Science,** *GPA : 3.81     May 2021*

## TECHNICAL SKILLS:

**Engineering:** CSWA Solidworks Certification, Control System Modeling, Circuit Development
**Programming Languages:** MATLAB, C++, Python, C, C-Lisp, Racket
**Manufacturing:** Trained Manual Machinist, CNC G-Code Programmer, PLC Programmer,
3D printing, Industrial Blueprint Developer, Automated Machine Design and Fabrication
**Workplace:** GitHub, Microsoft (Word, Excel, Powerpoint), Adobe (DC, Premiere, Illustrator)

## EXPERIENCE:

**Surgical Robotics Engineering Intern,** *Medtronic*                              *May 2019-August 2020*
- Updated the architecture of development testing software
  - Simplified program structure allowing for more streamlined operation and development
  - Applied a collection of additional trajectory generation methods including: Linear, Cubic, Quintic and a time independent Velocity Based path generation
- Programmed 3D playback visualizations of end effector pose over time
- Developed UI tools for data manipulation
- Used machine learning tools to identify and tune nonlinear friction models

**Engineering Intern,** *EPTAM Precision Machining Solutions*                   *May 2018-August 2019*
- Fully developed a self feeding table saw used in cutting aerospace grade syntactic foams.
- Manufactured semi-automatic machinery for the painting and labeling departments.
- Implemented a machine grade laser measurement unit to automatically test consecutive parts for imperfections in a high volume manufacturing line.
- Reprogrammed PLC driven ovens to follow a given trajectory using PID Control.
- Enhanced old machinery by redesigning and replacing gear ratios and belt drives.

## PROJECT WORK:

**Autonomous Pollination: Major Qualifying Project**                              *Academic Year 2020*
- This academic year I plan to develop a drone capable of autonomous pollination
- Drone size will be minimized, allowing for operation indoors and limits propeller downwash
- Much of the high level functionality is being written in C++ onboard a Raspberry Pi Zero and calculated instructions are being communicated to the onboard flight controller.

**RBE 3002 Self Location and Mapping in ROS**                              *October 2019*
- Using Python, my team and I developed a ROS system capable of mapping its environment
- The Turtlebot "Burger" was used, with an integrated lidar system to generate a 2D point cloud
- Applied the Kalman Filter to predict robot location within a mapped environment.

**RBE 3001 Kinematic Calculation and Trajectory Generation**                   *August 2019*
- Using MATLAB, I developed high level trajectory generation for serial robotic arms.
- Computer vision was used to determine object location relative to the robot base frame.
- Applied various methods of both forward and inverse kinematics through software.