

# Kedar More

## Robotics and Controls Engineer

A professional Robotics and Controls engineer with a background in Mechanical Engineering. An innovative person with a passion for learning the latest technological advancements.

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## WORK EXPERIENCE

### Controls Engineer Muller Technology

06/2021 - Present

Fort Collins, CO

Leader in providing custom solutions for thin-walled plastic packaging.

#### Achievements/Tasks

- Created programs for custom assembly line machines as quoted by the top manufacturers of the packaging industry on OMRON Sysmac Studio (PLC and HMI).
- Developed a new system of HMI pages which could visually take you to the parts of machine you want to supervise and make the required changes. This drastically improved the user experience of the technicians working on it.
- Worked on Staubli 6-axis robots to fulfill the speed requirements for some applications with a lot of products going through the process which reduced the time by 20%.
- Certified with Staubli CS9 Programming Level 1 (Staubli Robotic Suite and safety).
- Certified with OMRON Mobile Robot Programming and Fleet Management.

### Teaching Assistant (CAD and Manufacturing) University of Colorado, Boulder

08/2020 - 05/2021

Boulder, CO

#### Achievements/Tasks

- Conducted lab sessions with 25 undergrad students for 'CAD and Manufacturing' course and taught Solidworks from a basic to advanced level.
- Provided hands-on training to the students on CNC Lathe and Mill machines using techniques like turning, slotting, parting, absolute and incremental precision measurements to make aluminum products.
- Analyzed the final year projects through presentations and contributed some ideas for future development.

## EDUCATION

### Master of Science University of Colorado, Boulder

08/2019 - 05/2021

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#### Courses

- Algorithmic Motion Planning
- Feedback Control
- Linear Systems
- Advanced Robotics

### Bachelor of Engineering Mumbai Univesity

06/2015 - 05/2019

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## SKILLS

Omron PLC and HMI

Staubli Robotic Arms Safety and Coding

Solidworks

Python 3 (numpy matplotlib, pandas)

C++

OpenCV

Tensorflow

Keras

MATLAB

## PERSONAL PROJECTS

### Stabilize a Single Rotor at an input angle

- Constructed an assembly for an arm to rotate freely about an axis at one end and the other equipped with a single rotor.
- Programmed and studied the effects of different controllers such as P, PI, PID on the stability of the device.
- Created a model-based controller called variable PD and tested it to get a decrease in percent overshoot and settling time.

### Path Planning Algorithms in python3

- Bug Algorithms: Bug1, Bug2, Tangent Bug.
- Continuous: Potential Functions.
- Discrete: Wavefront.
- Sampling Based: Probabilistic Roadmaps, Rapidly exploring Random Tree, A\*, Dijkstra's.

### Cockroach inspired Robot

- Designed a 6-legged robot which could be controlled using only 2 motors. The design was inspired by the motion of a cockroach that it undertakes while in search of food and while attacking its enemy.
- Applied a path planning algorithm called Bug1 to reach a source of light from a certain point in an obstacle environment.
- Bug1 is inspired by the food sensing ability of a bug and the tactile sensors in its antennae.

### 'Twitch Plays TwiPi: An analysis and comparison with Twitch Plays Pokémon'

- Conducted a social experiment on crowd-controlled gaming using YouTube Live Streaming and Chat and python library 'ytchat' on Raspberry Pi.
- Hosted a server where 27 people controlled a wheeled robot simultaneously to achieve a specific task.
- Similar experiment was done with 1,2, 4 people and an in-depth analysis was done on the total time taken with variables such as complexity of the task, no of people, etc.
- Inspired by a video game 'Pokémon Red' which was played by 748006 players in real time.

### ABU Robocon

- Participated in Asia-Pacific competition 'ABU Robocon' and lead a team of 7 mechanical engineers to complete the tasks while working closely with the electronics and coding team.
- Frisbee throwing robot (manually controlled, frisbee could be thrown at a desired location accurately)
- Ball swinging robot (autonomous, used pneumatic systems)
- Quadrupedal robot (autonomous, used linear actuators and accelerometer for feedback)