

# Mohith Sakthivel

## Robotics Engineer



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## AREAS OF INTERESTS

- Robotics
- Reinforcement Learning
- Computer Vision

## ONLINE SPECIALIZATIONS

- Modern Robotics: Mechanics, Planning, and Control | [Northwestern University](#)
- Reinforcement Learning | [University of Alberta](#)
- Deep learning | [deeplearning.ai](#)
- Machine Learning | [Andrew NG](#)
- Algorithms and Data Structures | [UC San Diego](#)
- Introduction to Mathematical Thinking | [Stanford](#)
- Computational Thinking using Python | [MIT](#)

## PROGRAMMING LANGUAGES

Python C++ C

## OTHER PROGRAMMING TOOLS

PyTorch TensorFlow  
MATLAB Octave  
Maple LabVIEW

## AWARDS

- Best Outgoing Student**  
Mechanical Engineering  
Department (2014-2018 Batch)
- Study Abroad Program** with  
Full Tuition Fee Waiver
- Social Media Ambassador** for  
RMIT with a \$500 scholarship

## CO-CURRICULARS

- Teaching Assistant** at the Sensor  
Interface Lab, PSG Tech
- Correspondent at [The Bridge](#)  
- College Online Magazine
- Global Leader Experience**  
by Common Purpose at RMIT

## WORK EXPERIENCE

### Project Engineer

July 2018 – March 2020

#### ABB India Limited - Robotics and Discrete Automation Business

- Programmed and integrated robotic systems for applications like material handling, cutting, vision-guided robotic metrology, and space research

## RESEARCH EXPERIENCE

### Post Baccalaureate Fellow

August 2020 - Present

#### Robert Bosch Centre of Data Science and AI – IIT Madras

- Investigating topics around **Exploration** and **Meta-Reinforcement learning** under guidance of **Prof. Nandan Sudarsanam** and **Prof. Balaraman Ravindran**

## EDUCATION

### Study Abroad Program

CGPA: 4/4

Royal Melbourne Institute of Technology

Feb 2018 – July 2018

**Courses:** Advanced Dynamics (Post Graduate), Advanced Mechatronics Systems Design (Post Graduate), Automatic Control, Mechatronic Principles

### B.E Mechanical Engineering

CGPA: 9.19/10.0

PSG College of Technology

July 2014 – April 2018

## PROJECTS

### Robotic Test Cell - Space Docking Experiment

Mar 2019 - Nov 2019

#### Hardware In-Loop Simulation Lab – Indian Space Research Organization (ISRO)

- Developed a robotic system (2 PUMA manipulators on a linear track) to simulate the **motion of two satellites during docking** in outer space
- Performed **inverse kinematics** and **jacobian based redundancy resolution**
- Employed **google protobuf's C++ API** to establish a low-level high response control over the manipulators
- Implemented a fast and robust version of the **GJK algorithm** for **real time collision avoidance** between the two manipulators

### Rainbow DQN for Atari Learning Environment

June 2020

- Implemented Rainbow – a state of the art DQN agent for learning to playing Atari games from visual inputs

### YuMi - Rubik's Cube Solver | ABB Advanced Robotics Lab

July 2019

- Programmed **ABB's YuMi robot** to solve the Rubik's cube
- Used **Kociemba's algorithm** - a two phase solver employing an **IDA\* search**, to determine the solution moves for a given cube state

### Motion Planning and Control of Mobile Robot

Feb 2019 - May 2019

- Performed **motion planning** for a mobile manipulator (KUKA youBot) with **PI control** to navigate through an obstacle ridden environment
- Carried out the trajectory generation using **7-segment S-curve time scaling**
- Performed path planning using **Rapidly exploring Random Trees (RRT)** and, also alternatively, using **Probabilistic Road Maps (PRM)**

### Autonomous Robot Development

Mar 2018 - May 2018

#### School of Aerospace, Mechanical and Manufacturing Engineering, RMIT

- Designed an autonomous robot (for the 2018 Warman Competition) using the **Arduino Mega** to pick up a payload carrying three loosely supported golf balls from a pole of 80 cm height and to drop it at the target pose
- Developed a **PID controller** with encoder and IMU feedback

## INTERESTS

- Writing
- Photography
- Technology

**GRE:** Quant: 170 | Verbal: 157 | AWA: 4

**TOEFL:** 114