

# Rahul Thomas Benny

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## EDUCATION

- **College of Engineering Trivandrum(Kerala Technological University)** Kerala, India  
*Bachelor of Technology - Electrical and Electronics Engineering; GPA: 8.61(on 10)* August 2015 - May 2019  
**Relevant Courses:** Linear Control Systems, Non-linear Control, Microcontrollers and Microprocessors, C Programming, Digital Electronics, Analog Electronics
- **University of Utah** Utah, USA  
*Master of Science in Computing with a focus on Robotics(ongoing); GPA: 3.02(on 4)* August 2019 - Present  
**Relevant Courses:** Robot Control, Introduction to Robotics, Computer Vision, AI, Motion Planning, Machine Learning

## SKILLS SUMMARY

- **Languages:** Python, C, C++, MATLAB
- **Tools:** Simulink, GIT, Autodesk Fusion 360, VREP, Octave
- **Platforms:** Linux, Windows, Arduino
- **Soft Skills:** Leadership, Writing, Communication, Time Management

## EXPERIENCE

- **Bosch Rexroth CET- Center for Excellence**  
*Internship in Industrial Automation* July 2018
  - **Training:** Hands-on training in Industrial Automation comprising of operating pneumatic and hydraulic drives with PLC control system.
  - **Task specific implemenetation:** Designed and implemented a working system using the PLC controller for different industrial tasks and scenarios.
- **University of Utah**  
*Teaching Assistant-Human Computer Interaction* Aug 2019 - Dec 2019
  - **Assisting and Office Hours:** Held office hours for clearing doubts for a class of 40 students. Assisted the professor during class hours.
  - **Grading:** Graded assignments,quizzes and exams of the students.
- **University of Utah**  
*Graduate Student Researcher-Artificial Intelligence and Robotics in Medicine Lab* January 2020 - Present
  - **Research Work:** Working on building and motion planning for a tendon actuated continuum robot.

## SELECTED PROJECTS

- **Laser Guided Rover:** This robot is designed to mimic a space rover that has to navigate an environment given only an image of the map. The robot is guided through the environment by a laser(on the base station) once the base station charts out the best possible path possible.
- **Single point driving mechanism:** This system was designed to make mobile robotic systems more agile and maneuverable by using a spherical ball as a wheel. A simple robotic system that avoided obstacles was placed on this driving system that allows the robot to navigate tight spaces more freely and have zero turning radius.
- **Planning under Pose Uncertainty:** This work proposes a framework for solving a POMDP with a preexisting map of the environment that continuously solves the Markov localization problem, and uses the belief distribution over the state space combined with a resultant MDP policy from value iteration to determine an action to move the uncertain agent towards a goal destination.It is implemented in simulation where a robot is introduced into an environment of which it has a map does not know where it has placed. The robot localizes itself over time using a belief distribution for it's possible locations.
- **Feature Matching using HarrisNET and SIFTNET:** Created a SIFT CNN pipeline for feature detection and matching using Harris-Net for interest point extraction on Notre Dame, Paris500k dataset and achieved 89 percent test accuracy.Also achieved 94 percent accuracy on the Mount Rushmore images.
- **Self Driving Robot:** A robot capable of solving a maze whilst following the paths made of lines and avoiding collision with obstacles. Developed using an Arduino Uno Board and miscellaneous electronic components which makes use of a simple motion planning algorithm.

## HONORS AND AWARDS

- **Best Project Award at the Innov Expo IEDC CET,2019:** Single Point Driving Mechanism
- **Project funding awarded by the Kerala State Council for Science,Technology and Education,2019:** Single Point Driving Mechanism

## VOLUNTEER EXPERIENCE

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- **Event Coordinator, ROBOCET:** Conducted a robotics competition that challenged students to build their own line-following robots and to set the best time on the track. The event was held under the banner of the robotics club of College of Engineering Trivandrum, ROBOCET.
- **Committee Member, ROBOCET:** Organized events, conducted workshops and delivered talks in local high schools for robotics enthusiasts.