

Rajat Mehta

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Education

Northeastern University, Boston, MA (Co-op Availability: May-Dec 2022)	May 2023(Expected)
Master of Science in Robotics	GPA: 3.704
Concentration: Electrical and Computer Engineering	
Related Coursework: Machine Learning, Pattern Recognition and Computer Vision	
Shri G.S. Institute of Technology and Science, Indore, India	June 2021
Bachelor of Technology, Electronics and Telecommunication Engineering	GPA: 8.52

Technical Skills

Programming Skills: C,C++,Python, MATLAB, HTML, CSS, PHP, SQL
Libraries and Tools : PyTorch, Tensorflow, Keras, scikit-learn , scikit-image, OpenCV, Numpy, dlib, Pandas, ROS, Jupyter Notebook, Arduino, NS-3, Isim , Eagle
Hardware: Raspberry Pi, ATMELECU, Arduino, ESP Modules, RAMPS Shield

Academic and Relevant Projects

Dense Depth maps generation using LiDAR and Stereo Correspondences **Oct 2021-Dec 2021**

- Implemented a novel approach for generating dense 3D depth maps using point cloud data from LiDAR and the disparity generated from stereo images.
- Designed a special CNN architecture with an encoder-decoder network using a Spatial Pyramid Pool Module for the Stereo Images.
- Concatenated the cost volume produced by the disparity branch and the feature vector generated by CNN from the LiDAR data to produce the depth image and to calculate loss while preserving the feature information.
- Trained the model on KITTI depth selection and stereo datasets and achieved an RMSE score of 1548.89 while generating depth maps in 0.4s on an NVIDIA GTX 1060 GPU.

Face monitored Robotic Wheelchair System with a WiFi Controlled Server **Feb 2021- Apr 2021**

- Developed a Robotic Wheelchair prototype which can be controlled using facial gestures of the user.
- Extracted facial landmarks in real time from the video stream generated by the ESP-32 CAM Module and used them to predict the intent of the user.
- Used the Eye Aspect Ratio(EAR) to detect blinking to start and stop the wheelchair while gradient angle between the eye coordinates was utilized to take right and left turns according to the orientation of user's face.
- Created a WiFi server with ESP-32 CAM module which was used to send signals to the client NodeMCU to run the motors.

Maze Solving Robot **May 2020 – June 2020**

- Developed a line maze solving robot using an Arduino Nano Board and QTR-8RC reflectance sensor array which can traverse the complete maze in 1st run and can compute the shortest path to the destination in the 2nd run.
- Implemented the "Left Hand Algorithm" in the first round followed by a "modified A-star algorithm" in the second run for getting the shortest path.

Internship Experience

Robotics Intern **Dec 2018-Jan 2019**

Rashail Tech Labs Pvt. Ltd., Indore, India

- Developed a wireless Animatronic Arm that can replicate the motion of a prototype manual arm.
- Used potentiometers and stepper motors at the joints of manual arm and animatronic arm respectively.
- Calibrated and mapped the potentiometer readings of the manual arm to get the stepper angles which were sent over a WiFi server setup using esp8266 modules.
- Successfully implemented the angles fetched from the server on the stepper motors of the animatronic arm to move it in the desired direction.