

Lekha Walajapet Mohan

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EDUCATION

August 2015 - December 2016

M.S. in Robotic Systems Development, Robotics Institute, School of Computer Science

Carnegie Mellon University, Pittsburgh, USA

July 2010 - May 2014

B.E in Electric and Electronics Engineering (*with honors*)

Anna University, Sri Sairam Institute of Technology, India

RESEARCH EXPERIENCE AND PROJECTS

- **Perception Software Stack for Self-Driving**, Robotics Engineer *(Jan'18 - Present)*
Luminar Technologies, Palo Alto
 - ★ Evaluate and Post process data collected using in-house manufactured LiDAR sensor (Visibility upto 200 meters, less than 10% reflectivity) for vehicle autonomy
 - ★ Worked on applied research and developed **statistical models to improve perception tasks**
 - ★ Developed a perception software framework as a part of software team for enabling self-driving features
 - ★ Working on **auto-calibration** of multimodal sensor data for multiple sensor setup
 - ★ Worked on **object detection** and various **segmentation models** for multimodal sensor data
- **Learning from Human Demonstrations on Baxter Platform**, Research Assistant(Extern) *(Feb'17 - Dec'17)*
Advisor: Prof. Abhinav Gupta, Carnegie Mellon University
 - ★ Collected large scale **dataset** that contains 8260 human-robot demonstrations over 20 different robotic tasks
 - ★ It consists of videos of human demonstrations and kinesthetic trajectories of robot demonstrations
 - ★ Collected dataset is being used to train deep neural network for the task of mapping 3rd person video features to robot trajectories
 - ★ Work has culminated into a research paper presented at **CoRL, 2018**.
- **Human Assistive Robotic Picker – UR5 platform, Amazon Picking Challenge** , MRSD *(Aug'15 - Mar'16)*
Advisor: Prof. Maxim Likhachev, Carnegie Mellon University
 - ★ Represented CMU in **Amazon Picking Challenge'16** – Robocup, Leipzig, Germany [[project link](#)]
 - ★ Developed perception and grasping sub-system using UR5 industrial robot for warehouse automation
 - ★ Automated collection of grasping dataset to **estimate optimal grasping surface(improved accuracy by 8.1%)**
 - ★ Trained deep neural network models for identification and semantic segmentation of items under clutter (as a team of 2)
- **Task and Motion Planning for Complex Manipulation on HERB platform, CMU** *(Jan'16 - Mar'16)*
Collaborator: Dr. Jennifer King, Carnegie Mellon University
 - ★ Implemented **integration of high-level task planner with low-level motion planners** on the HERB platform
 - ★ Given the task of clearing a cluttered table, the task planner sorts out subgoals and the motion planner accordingly generates arm motions for HERB
- **Collision Avoidance for Industrial Robots**, Robotics Intern *(May'16 - Aug'16)*
Supervisor: Jonathan Whetten, Director of Software Engineering, 5D Robotics
 - ★ Predicted robot trajectory for **collision avoidance** using in-house built sensor for industrial robots
 - ★ Integrated the above into an Rviz plugin - **deployed as a product** at 5D Robotics's customer base
 - ★ Worked on **perception for slot-detection** on autonomous forklifts using LiDAR data
- **Estimation of Orientation and Position of Madras Parallel Manipulator**, Project Associate *(May'14 - Aug'14)*
Advisor: Prof. Sandipan Bandyopadhyay, Indian Institute of Technology- Madras
 - ★ Built a customized stereo vision system for a novel 3 DoF parallel manipulator
 - ★ Implemented real-time pose detection of moving manipulator to control its orientation for rehabilitation purposes

PUBLICATIONS

Conference Publications:

- Pratyusha Sharma*, Lekha Mohan*, Lerrel Pinto, Abhinav Gupta. **Multiple interactions made easy (mime): Large scale demonstrations data for imitation.** *Proceedings of Machine Learning Research. 2nd Annual Conference on Robot Learning, CoRL 2018, Zürich, Switzerland, 29-31 October 2018*
- Samerender N.H, W.M.Lekha, H. Ramyya. **Pupillometry in Conjugation with Automatic Parking as a Tool of Automobile Safety.** *Proceedings of 2014 International Conference on Signal Processing and Integrated Networks (SPIN).* 2014

Journal Publications:

- Samerender N.H, H. Ramyya, W.M.Lekha. **Secure Methodology for Data Encryption with DNA Steganography and vein Patterns.** *International Journal of Information and Computation Technology.* 2013

AWARDS AND SCHOLARSHIPS

- Awarded the **Best Outstanding Student of the Year 2014**, by Sri Sairam Institute of Technology
- Awarded the **Best Cadet Award** - National Cadet Corps India, a 2 year military focused search-and-rescue training camp (out of 180 cadets)
- Ranked **3** in **Innovative Projects of the Year 2014** (400 students) for my work on **Real-Time Gesture Recognition Controlled robot using wearable computing**, instituted by Department of Electrical and Electronics, Sri Sairam Institute of Technology

SKILLS

- **Languages** : C++, Python, Matlab
- **Frameworks** : ROS, PyTorch, Tensorflow

RESEARCH INTERESTS

Artificial Intelligence and Robotics : Robot Manipulation, Multi-modal perception, Human-Centered Robotics
Statistics and Machine Learning : Robot Learning, Deep Neural Networks, Bio-inspired learning

REFERENCES

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