

Lakshay Gopalka

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EDUCATION:

Worcester Polytechnic Institute (WPI), Worcester, MA

Master of Science in Robotics Engineering (GPA 4.0)

May 2021

Relevant courses: Robot Dynamics, Robot Control, Artificial Intelligence, Deep Learning, Optimal Control

SRM Institute of Science and Technology, Chennai, India

Bachelor of Technology in Mechatronics Engineering

May 2019

SKILLS:

Programming:

HTML, C, C++, Python, MATLAB, Verilog, Tensorflow

Software/Hardware:

SolidWorks, Ansys, Mission Planner, LabVIEW, FluidSIM, ROS, Gazebo, Rviz, MoveIt
Pixhawk, MultiSim, Linux, PLC, Motion Capture system, Arduino, Git

PROJECTS:

In-hand manipulation using 7-DOF arm and variable friction gripper, WPI, USA

Jan,20 – Present

- Developing dexterous manipulation strategies using the gripper to grasp and rotate objects of variable friction
- Performing simulation in ROS using Franca arm to check the performance of the sliding, rotation tasks in task space

Iterative based learning controller for continuum snake robot, WPI, USA

Aug,19 – May, 20

- Implemented an iterative learning controller and PID controller on a modular pneumatic soft snake robot
- Designed an A* based adaptive motion planning algorithm for visualizing kinematic footprint of the robot
- Conducted experiments on the robot to validate the iterative controller superior performance over the PID

Generating human voice using Deep Learning, WPI, USA

Jan,20 – May,20

- Constructing GAN and NN topology using Tensorflow framework to develop speech generation model
- Using text data and Tacotron model to input words for training and human metrics to assess the audio output

Dynamic step control for exoskeleton stair climbing, WPI, USA

Aug,19 - Dec,19

- Developed a trajectory planner controller using Dynamic Motion Primitives (DMP) to assist human walking
- Investigated 10 human subject data obtained using motion capture to model dynamics and joint movement
- Successfully segmented PointCloud data and trained DMP for step planner trajectory up to 98% accuracy

Autonomous control & Implementation of Avionics in fixed-wing UAV, TKU, Taiwan

Jan,19 - April,19

- Built autonomous controller and ground station in a team of 2 using Pixhawk module and MATLAB Simulink
- Analyzed and Installed the Avionics and Communication hardware component in the UAV
- Conducted several successful tests in SITL and HITL using X-Plane for Mission Planner & controller algorithm

Determination of Attitude gauge reading in aircrafts using Computer Vision, TKU, Taiwan

Jan,19 - April,19

- Selected as a researcher to work on commercial aircraft with Aviation Safety Council (ASC) of Taiwan
- Implemented Image Processing Toolbox in MATLAB to analyze and filter out raw image data successfully
- Developed an algorithm to determine the Attitude reading using pitch, banking angle up to 5% accuracy

EXPERIENCE:

Teaching Assistant, Electrical and Computer Engineering, WPI, Worcester, MA

Aug,19 - Present

- Coordinating with the professor to assist students with lab/coursework and grading exams/ homework
- Providing hands on experience with MATLAB, Verilog, microcontrollers, amplifiers and various sensors.

Intern, ABB India Limited, Faridabad, India

June 2018

- Researched the various configurations for IRB robot involved in the production of Induction Motors
- Investigated the efficiency of the production line and provided measures to improve plant performance

Intern, JCB India Limited, Ballabgarh, India

Dec 2017

- Assisted on assembly and main-frame line to understand the production process of Backhoe Excavators
- Performed testing operations to determine the load capacity and optimized process integration process

ACTIVITIES & AWARDS:

Committee member, IEEE, AAES, Green Club

Aug, 19 - Present

President, Social and Bhumi NGO Club, Chennai, India

Sep,17 - May,19

Public Relation Manager, Society of Automobile Engineers (SAE), Chennai, India

June, 17- May, 19

Performance based Scholarship for Undergraduate studies by SRM IST

2016-2018