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RAKSHITH SUBRAMANYAM

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EDUCATIONAL QUALIFICATION

Arizona State University, Tempe, Arizona

Aug 2016 – May 2018

Master of Science in Electrical Engineering- Major in Control systems **GPA – 3.72/4**

SRM University, Chennai, India

Aug 2012- May 2016

Bachelors of Technology (B. Tech), Mechatronics Engineering **GPA – 8.87/10**

SKILLS

Proficient in ROS, Python, Tensorflow, C++, Arduino, Eagle, Matlab, LabVIEW, Simulink, Solidworks and Linux.

PROJECTS

Self-Driving Car test bed, Master's Thesis, Arizona State University

May 2017 – May 2018

- Made an **emulation of self-driving** car using a swarm of differential drive robots.
- Programmed the robot follow lane, detect changes in traffic lights, detect other cars on the road, predict their current state, and communicate with the intersection and the user using **Image Processing** Techniques .

Coffee Cup Identification, Arizona State University

Feb 2018 – May 2018

- Automatic tagging of cups during the order placement by reading qr codes on the cups using a camera.
- Digitally displaying the name of customer and the drink around the cup on the hand off counter using camera Matrix.

MYRA – Humanoid Robot, Arizona State University

January 2018 – March 2018

- Engineered a humanoid robot that can classify human face and emotions and respond accordingly
- Trained a **LBPH** (Local Binary Pattern Histogram) for classifying faces and emotions.
- Made the robot interact using its eyes(LED Matrix) and arms(3 DOF) controlled by a low level controller.

Cart-Pole Balancing by Reinforcement Learning, Arizona State University

August 2017 – December 2017

- Wrote a **URDF** (Universal Robot Description Format) to create a cart pole model in ROS.
- Trained **Policy gradient** model in 34 trials to balance the cart pole for 60,000-time steps.

Lab2Moon, Arizona State University

Jan 2017 – March 2017

- Designed a **cyanobacteria monitoring system** which actively monitors and maintains desirable conditions for the cyanobacteria to culture on **Moon**.
- Presented the Project in India and secured a **launch to moon** in December 2017.

VAYU-Vertical Take-off and Landing Aircraft (Senior Thesis), Chennai, India

Dec 2015-March 2016

- Designed and manufactured a **hybrid VTOL** aircraft based on the principles of delta wing and propeller lift.
- Formulated a self-adjusting **PID tuning algorithm** to stabilize the aircraft in case of propeller failure.
- Made a **dynamic camera stabilization** system using brushless motors and servo motors.

CanSat Annual Competition, Burkett, Texas

Aug 2014 – June 2015

- Supervised a multidisciplinary team to build a **miniature satellite** traveling through the planetary atmosphere sampling the atmospheric composition. Secured **world rank 1** in design reviews and managed the end to end project plan and complete finance of \$20000.
- Probed a concept of **altitude determination using the magnetic field strength** to aid the barometric altitude sensor during a random variation in the environmental pressure.

ABU Robocon, Pune, India

Aug 2013- March 2016

- Designed various PCBs in Eagle which were mainly used as Power distribution boards and Microcontroller interface boards for badminton playing robots.
 - Designed **Shuttle detection** algorithms using Image processing techniques.
 - Developed **mapping algorithms** for arena mapping and implemented **PID control algorithm** for a smooth robot operation. Efficiently managed a \$15000 project budget and was awarded with the *Best Economical Robot award*.
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PROFESSIONAL EXPERIENCE

Luminosity Lab, Arizona State University

August 2016-Present

Hardware Design Engineer.

- Incorporated multiple house models in ROS resembling a house to train a ML model to aid blind people navigate.
- Devised an algorithm to create a **hexagonal map of ASU** campus and distinguishes fly and no fly zone using the data of building elevation.
- Developed a human monitoring system based on **IOT** which includes a camera, health monitoring system and active ambiance control system.

Lab Designer and Teaching Assistant, System Dynamics and Controls, Arizona State University

Summer 2017

- Authored instructional introduction to applied robotics to the undergraduate course MAE 318.
- Scripted an experimental system identification method and controller design for a differential drive robot.