

Education

Colorado State University

Masters of Science in Electrical Engineering

Courses include : Hardware/Software system design in embedded system, Introduction to robot programming and Simulation and Many core system design using machine learning.

(Fort collins, Colorado)

Aug 2019 - present

Hindustan University

Bachelor of Technology Mechatronics Engineering (CGPA: 7.3/10)

course include: 2D/3D modelling, C++, Python, ROS and Arduino

(Chennai, TamilNadu, India)

2013 - 2017

Experience

Graduate Research Assistant

Colorado state University

(Fort Collins, Colorado)

January 2020 – Present

- Working on thesis towards Machine Learning, Image Processing and Machine vision

Colorado state university vehicle innovation team

Cavs Technical Advisor

(Fort Collins, Colorado)

Sept 2019 – Present

- Eco car mobility challenge is about prototyping Advance vehicle technology competition
- My role as a graduate student is to come up ideas that can improve the Cavs system performance.

Cambionix Innovations

Co-founder and Machine learning Architect.

(Chennai, India)

Oct 2017 - Jun 2019

- Co-founded Cambionix Innovations with the vision to enhance user experience and automate small and medium scale industries.
- My role is to design, integrate and innovate futuristic solution that can enhance the performance of existing mechanical devices.
- Top 10 best engineering services start-up in India 2018.

Metaplore solution Pvt. Ltd

C++ Developer

(Chennai, India)

April 2017 – October 2017

- I was working on Image Processing based security solution where we do facial recognition, pattern matching etc.

Professional Skills

Programming and System Integration:

Languages: C++, Java, Python, HTML, CSS, Node js, Angular js, PHP, JavaScript and Native Android.

Platforms: AWS, Azure

Database: SQL, MongoDB, Oracle.

Artificial Intelligence and Machine learning:

Packages: TensorFlow & lite, PyTorch, cuda, FastAI, Keras.

Tools/platform: Jupiter, Paperspace, AWS.

Robotics:

Software: Robot Operating System, Arduino, Qt, Processing, Lab-view, Fluid SIM, PLC programming, Sensor circuit designing and integration, CircuitMaker, PCB (software), Matlab.

Hardware: Arduino, Raspberry Pi, Nvidia JTK1 and JTK2, Intel Microprocessors, PLC, PIC, Jetson TX2.

Designing and simulation:

Auto-cad, Fusion 360, Blender, Solid Works, Photoshop, Illustrator, Qt Designer.

Academical Projects

Wireless ultrasound and body monitoring device

Duration: 12 weeks

Designing and fabricating a compact ultrasound device which has a wireless data transmission via Wi-Fi.

Unmanned aerial vehicle with position and altitude lock with GPS based navigation system

Duration: 20 weeks

An open-source software and hardware based Autopilot system was designed with altitude and position lock using Robot operating system. Neural network and Fuzzy logic where used for decision making.

ROS Based Stereo Vision System For Autonomous Navigation

Duration: 20 weeks

A Stereo vision based autonomous navigation system that uses Neural Network and Image processing for Autonomous Navigation. Communication was established via Wi-Fi with Robot Operating System(ROS) which sends and receive signal from user. A custom made Android App that works on ROS helps in GPS data acquisition for continuous feedback.

Android Based Position Tracking Robot

Duration: 16 weeks

A Vision based object tracking semi-autonomous robot which uses an OpenCv based android app to capture and process images and then the data is transferred to Arduino. This data is processed to find the exact location of the object and then the controller send data to the motors to track the object.

Automatic dial gauge calibrator

Duration: 16 weeks

An automating dial gauge calibration device. I am developing a prototype of an automated dial gauge calibration device with universal dial gauge probe adapters. I am working on a microprocessor based DAC which can be used as an alternative for DRO machine which can potentially reduce the cost of operation and reduce the time and parallax errors made by human eye.

Kibana customization

Duration: 2 weeks

Kibana is a visualisation web application. I customised it with various new features that includes changes in the chart display, changes in time interval, changes in frequency of refresh interval and also added new customization displays such as pie chart, health metric, etc. I worked with HTML , Node js and Angular js.

Projects for Competition

Hindustan mars Rover

Duration: 24weeks

As a Technical Team Manager I took up the responsibility of designing the technical aspects of the prototype of an Martian rover for the competition "University Rover Challenge 2014" which was held by Mars Research Society USA, UTAH. We secured 10th place out of the 36 finalist and we secured 2nd place out of 8 finalist from India

Team Falcod

Duration: 18weeks

As the Team lead and software developer of the project i developed an open-source software and hardware based Autopilot system For the competition DRONES FOR GOOD conducted by government of UAE. Artificial neural network and Fuzzy logic where used for decision making. Autopilot system was built using Arduino and Robot operating System

Publication

Dinoponera 6 Wheeled Exploration Vehicle with Swarm Bots

August 2018

21st International Mars Society Convention, Mars Society, USA

ROS Based Stereo Vision System for Autonomous Vehicle

September 2017

Icpsi, Ieee Xplore

Co-Authors: Gautham sivathan and Varun Rufus Raj Samuel

Low Cost ROS Based Semi-Autonomous Drone with Position and Altitude Lock

September 2017

Icpsi, Ieee Xplore

Co-Authors: Gautham sivathan and Varun Rufus Raj Samuel

Arachnid 6 wheeled all-terrain explorer with 7 DOF robotic arm

September 2017

20st International Mars Society Convention, Mars Society, USA

Co-Authors: Allen Fredrick and Shyam R Nair.

Achievements

- Top 10 best engineering services start-up in India 2018.
- Invited as track speaker to present a model on Mars rover in 20th International Mars Society convention and 21th International Mars Society convention
- 17th place in University Rover Challenge 2015 conducted by Mars Research Society, Utah, USA
- Finalist in Robotryst 2013 conducted by Robosapiens at IIT DELHI

Membership in Organization

- Institute of Electrical and Electronics Engineers
- ROS Community
- Pycon India
- Mars society India

Languages Known:

- Tamil (Native speaker)
- English (Proficient) IELTS: 7 BAND