

# VIVEK SRINIVAS MARGAPURI

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## Education

### **Masters in Electrical Engineering**

**August 2015 - Present**

#### **University of North Carolina, Charlotte, NC**

Coursework includes Algorithms and Data Structures, Computer Architecture, Operating Systems, Embedded Systems, Wireless Sensor Networks, Programming Mobile Devices, Internet of Things, Big Data, Fundamentals of Wireless Protocols and Knowledge Discovery in Databases.

### **Bachelors in Electronics and Communication Engineering**

**June 2011 – June 2015**

#### **GITAM University, Hyderabad, India**

(CGPA 3.0/4)

## Projects

### **Simultaneous Localization and Mapping on a Turtlebot**

**Present**

- SLAM is an algorithm by which a robot determines its location in an unknown and unsymmetrical environment.
- The work includes developing a suitable Extended Kalman Filter SLAM algorithm, implementing RANSAC algorithm for landmark allocation and detection.
- Tools utilized in this project are Turtlebot 2.0, ROS (Robot Operating System), MATLAB – Robotics toolbox.

### **Detection and surveillance of electronic isolators using HOG**

**December 2016 – January 2017**

- The electronic isolators are often situated at great heights and it becomes very difficult to monitor from ground.
- This project aims to implement a computer vision algorithm for detecting electronic isolators from an input video of a surveillance drone.
- An associated SVM (Support Vector Machine) was trained with HOG (histogram of oriented gradients) features using built in OpenCV libraries.

### **Face and feature detection using HAAR cascade**

**November 2016**

- This project included the use of OpenCV libraries to create a cascade type trainer that can detect HAAR like features.
- The trainer used was an N-stage Cascade Classifier.
- Vectors were created using an open source face database and negative images. This training dataset was used to train the cascade classifier.
- A simple python application was created that used this classifier to detect faces in either an image or a video stream.

### **Home appliance application to control IOT devices**

**September 2016**

- This project includes controlling home appliances like thermostats, lights and garage doors in an IOT network using an android mobile application.
- Through the application, one can monitor and control the home appliances.
- For simulation purposes, the project was implemented using Raspberry – pi boards as IOT devices and mobile application was built on Android studio.

### **Smart Utility Application for Android**

**November 2015**

- Smart Utility is an application which schedules the activity time of electronic appliances at homes, offices and suggests a schedule that consumes least power based on the load they take and peak hours of operation.
- The work included developing an android user interface, creating a home server, a utility server, a schedule optimization algorithm running on a single node Hadoop cluster.

### **Map Reduce Transition Probability Matrix**

**October 2015**

- Developed a code for transition probability matrix to compare the weekly statistics of stocks of a year.
- The project included programming a Hadoop map reduce function, java code for computing probability matrix on eclipse.

### **Mobile Application for Package Tracking**

**September 2015**

- This application displays tracking details of a package and its delivery status based on its unique tracking number.
- The project included developing a mobile user interface, a java code to compute shortest paths between two cities, a server that holds package details and PHP scripts that establish link between the server and the application.

### **Video Streaming through Wimax**

**Nov 2014 – April 2015**

- A live video streaming was simulated from 2 points through Wimax topology and results were compared with video streaming through ADSL.
- Simulation was carried out using MATLAB and OPNET modeler.

## Skills

- Proficient with embedded C, C, C++, MATLAB, ROS, OpenCV.
- Significantly good at developing applications with Java, Python, Hadoop, Android Studio.
- Web technologies: significant knowledge to work with HTML, CSS.
- Software: Proficient with Adobe Photoshop, Adobe illustrator, AutoCAD, OPNET modeler.