Vinaykumar **Hegde**

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EDUCATION

University of Southern California (USC)
MS in Electrical Engineering
Expected Graduation: May 2016
Los Angeles, CA
CGPA: 3.95/4

Visvesvaraya Technological University (VTU)
BE in Electronics and Communication Engineering
R. V. College of Engineering | Bangalore, India
Graduation: Jun 2011
CGPA: 9.13/10

COURSEWORK

Graduate
Linear Algebra (EE441)
Probability (EE503)
Robotics (CSCI545)
Computer Vision (CSCI574)
Machine Learning (EE660)
Coordinated Mobile Robotics (CSCI599, Audit)
Pattern Recognition (EE559)
Linear Systems (EE585)

Undergraduate
Real Time Embedded Systems
Artificial Neural Networks
Computer Orgranization & Architecture

Certifications
Machine Learning - Coursera
Design & Analysis of Algorithms 1 - Coursera
Scalable Machine Learning - EdX.

Online Courses
Deep Learning - Udacity
Autonomous Mobile Robotics - EdX

SKILLS

Programming
C/C++ • Python • MATLAB

Robotic Platforms
ROS • Gazebo • iRobot Create • Nao • SL Simulator • Kinect • Arduino • AR Drone • Nvidia Jetson TK1

Other
Git • OpenCV • IPython • IPython.Parallel • Scikit-learn • numpy • Theano • Keras • Starcluster

RESEARCH

Directed Research on Indoor Mobile Robot Navigation
Jan 2016 – Current | Advisor: Prof. Laurent Itti | USC, Los Angeles

- Designing a low cost hardware/robot. Developing ROS packages and ROS messages to control mobile robot.
- Using Kinect/Asus Xtion pro for RGBD SLAM and Indoor Navigation.
- Researching on using low cost IR and Ultrasonic sensors for surprise detection in indoor mobile robot navigation.

EXPERIENCE

Digital Design Engineer - Texas Instruments
Jul 2011 – Jul 2014 | Bangalore, India

- Designed and characterized Standard Cells for TI's processes.
- Developed automation flows for characterization.
- Designed Python based web-server for Digital Design Margin Calculator.

PROJECTS

CIFAR-10: Object Detection in Images
(Fall-2015/Course: EE660/Instructor: Prof. Keith Jenkins)

- Compared object detection techniques on CIFAR-10 dataset (SVM, Adaboost and Neural Networks). Achieved 78% accuracy using CNN with Keras and Theano.
- Keywords: Keras, Theano, IPython Parallel, Starcluster, AWS, HOG, SIFT

Lane Detection And Tracking
(Spring 2016 | Personal Project)

- Used Canny Edge Detection and Hough Transform techniques to detect the lanes in highway images.
- Applied Histogram Equalization and Bilateral Filtering techniques to enhance the images and Kalman Filter and Particle Filters to track the lanes in consecutive images.

Computer Vision Projects
(Fall-2015/Course: CS574/Instructor: Prof. Ram Nevatia)

- Implemented an algorithm using SIFT feature descriptors + RANSAC to locate objects in an image and calculate homography matrix.
- Implemented structure from motion and affine reconstruction using Tomasi-Kanade factorization

Heterogeneous Coordinated Robots for Navigation
(Spring-2015/Course: CSCI599/Instructor: Prof. Nora Ayanian)

- Navigating ground robot (Turtlebot) using live feed data (image) from AR Drone quadcopter. (Implemented the idea on ROS and Gazebo.)

Human Activity Recognition from Inertial Sensor Data
(Spring-2015/Course: EE559/Instructor: Prof. Keith Jenkins)

- Using pattern recognition and machine learning techniques to predict the human activities like walking, standing, sitting and laying. Used mobile phone inertial sensors dataset from UCI repository.
- Tools used: Python, Scikit-learn, numpy

Balancing Nao Robot in One Leg
(Spring-2015/Course: CSCI545/Instructor: Prof. Stefan Schaal)

- Using Inverse kinematics, minimum jerk/cubic spline controls, and COG Jacobian techniques to balance the Nao Robot in single leg.
- Implemented the idea using SL simulator.

Avionics Project
(Undergraduate Senior Project)

- Developed IMU sensors interface and control algorithms for quadcopter on LPC2148 ARM controller.
- Designed data acquisition system and radio transceiver for Unmanned Aerial Vehicles with LabVIEW and ZigBee.