Vinaykumar S. Hegde

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Education

University of Southern California, Los Angeles   **May-2016**
Master of Science in Electrical Engineering   **GPA: 4.0/4**
Courses completed: Linear Algebra, Probablility
Current courses: Pattern Recognition, Robotics, Co-ordinated Multi Robots,
Linear Systems theory
Online Courses: Machine Learning, Algorithms (Coursera)

Rashtreeya Vidyalaya College of Engineering (RVCE), Bangalore   **Jun-2011**
BE in Electronics and Communication Engineering   **GPA: 9.13/10**

Skills

Programming Languages:	C/C++, Python, Perl, 8086/AVR/ARM Assembly, Verilog, MATLAB
Operating Systems:	Windows, Linux and Mac OS X.
Robotic Platforms:	ROS, Gazebo, Nao, iRobot Create, SL Simulator, AR Drone, Arduino
Web Technologies:	HTML, CSS, sqlite/MySQL, CMS (Joomla and Wordpress)

Experience

Digital Design Engineer   **Texas Instruments, India**   **Jul 2011- Jul 2014**

- Designed and characterized Standard Cells for TI's processes.
- Instrumental in automation and flows setup for characterization and simulations of standard cells.
- Designed Python based web-server for Digital Design Margin Calculator.
- Designed synthesis experiments and checkers to validate standard cells. Played a key role during tool transitions.
- Developed device drivers and Wiring modules in early stage development process of Aurava (Arduino equivalent for MSP430).
- Co-authored a paper on "Surprise or Shock? Transistor level functional analysis of digital circuits and systems are still needed!" This was awarded best paper at CDN live 2014, India.

Projects

Heterogeneous coordinated robots for navigation

- (Spring-2015/CSCI599/Prof. Nora Ayanian)
- Navigating ground robot (Husky) using live feed data (image) from AR Drone quadcopter.
- Implementing the idea in ROS and Gazebo.

Human Activity Recognition from Inertial Sensors

- (Spring-2015/EE559/Prof. Keith Jenkins)
- Using pattern recognition and machine learning techniques to predict the human activities like walking, standing, sitting and laying. Tools used: Python, Scikit-learn, numpy

Balancing Nao Robot in one leg.

- (Spring-2015/CSCI545/Prof. Stefan Schaal)
- Using Inverser kinematics, minimum jerk/cubic spline controls, and COG Jacobian techniques to balance the Nao Robot in single leg. Implementing the idea in SL simulator.

Avionics Project

- Developed IMU sensors interface/device drivers for LPC2148. Designed control and stabilization algorithm for quadcopter using PID control loops and inertial sensors (Accelerometer and Gyroscope) on LPC2148 ARM controller.
- Worked on design of wireless video transmission system for UAVs.
  Developed 24fps QVGA video transmission system using OMAP3,
  Embedded Linux and WiFi.
- Designed data acquisition system and radio transceiver for Unmanned Aerial Vehicles with

Student Satellite Project

- Developed device drivers for CC1020/CC1070 transceivers on Atmel AVR32-32 bit microcontrollers.
- Simulated bit error rate in space using Simulink/Matlab.
- Implemented trimmed down version of AX.25 communication protocol stack on AVR32 for satellite communication.