Sunny Arokia Swamy Bellary

9547 University Terrace Drive Apt C, Charlotte, NC 28262 | (980) 938-9853 | sbellary@uncc.edu
LinkedIn: http://www.linkedin.com/in/sunnybellary

EDUCATION

Master of Science in Electrical and Computer Engineering   Dec 2018
The University of North Carolina at Charlotte
GPA: 4.0/4.0
Relevant Coursework: Mobile Robot: Sensing Mapping and Exploration, Robot Motion Planning, Digital Image Processing, Advanced Embedded Systems, Control Systems Theory II, Applied Artificial Intelligence, Embedded Signal Processing, Medical Signal Processing, Convolutional Neural Networks, Robotics: Vision Intelligence and Machine Learning, Neural Networks and Deep Learning

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SKILLS

- Programming Languages: C, C++, C#, Python
- Development environment software: Microsoft .Net framework, Microsoft visual studio
- Simulation Packages: Multisim, PSpice, PSim, PSCAD, and Proteus
- Graphical Programming: LabVIEW
- Embedded Software: Kiel μvision, IDE Arduino, AVR Studio, Energia, and Code Composer Studio
- Scientific Computing Tools: MATLAB & SciLab
- Eagle for PCB Design
- Robot Simulator: Gazebo
- Machine Learning Libraries: Scikit, TensorFlow
- Version control: Apache subversion (SVN), git

WORK EXPERIENCE

Teaching Assistant   Aug 2017 - present
University of North Carolina at Charlotte, NC, USA
- Teaching, Instruments and Networks lab to undergraduate students
- Course is designed to provide hands on experience with electrical devices, circuit construction and debugging, and operation of laboratory instrumentation
- Gained knowledge of circuit boards, teaching experience and principle involved in designing basic electronic circuits
- Utilized classroom management and discipline strategies

Associate Software Engineer   Nov 2015 - Dec 2016
Accenture Services Pvt. Ltd., Bangalore, India
- DevOps Engineer under Continuous Integration Team having Agile software development methodology
- Developed build scripts and deployed the applications to build servers using Jenkins
- Deployed to cloud servers using Pivotal Cloud Foundry
- Worked closely with onshore and clients by providing support related to Continuous Integration team

Project Intern   Jun 2014 - Jul 2014
Hindustan Aeronautics Limited, Bangalore, India
- Designed Embedded Control of Fuel Flow of an Aero Engine by RVDT method
- ATMEGA16 microcontroller was used to design the Embedded control and was programmed in C
- Equivalent analog circuit was also designed using operational amplifiers
- Simulated the system using Multisim (for analog circuit) / Proteus (digital circuit) and the PCB was designed

SELECTED PROJECTS

People Counting using Raspberry Pi, Charlotte   Dec 2017

- Raspberry Pi was interfaced with camera and MATLAB Simulink
- People Counting algorithm was written in MATLAB and the model was tested in real time
- Up count and down count was added to know the number of people in room

Image Classification using Deep Neural Network & Logistic Regression, Coursera   Dec 2017

- Built the deep network and applied to cat vs non-cat classification
- Compared the accuracy obtained using Deep Neural Network & logistic and found neural net having good accuracy when properly trained with large set of data

Hand Sign Recognition using Convolutional Neural Networks, Coursera   Dec 2017
- Built and trained a ConvNet in TensorFlow for classifying the signs indicating the numbers from 0 to 5
- SIGNS database was used as to train the neural network
- Train and Test accuracy was 94% and 78.3% respectively

Lane identification for Self-Driving cars, Udacity   Nov 2017

- The lane identification algorithm was implemented using MATLAB and image processing techniques
- Canny Edge detection was used to detect the lane on road and Hough transform to find the line with highest votes
- Gaussian smoothing was done to smooth edges
- Algorithm was implemented in real time

Extended Kalman Filter Simultaneous, UNC Charlotte   Jan 2017 to May 2017
Localization and Mapping (EKF-SLAM)
- Implemented the extended Kalman Filter version of the Simultaneous Localization and Mapping algorithm using EKF
- Implemented the algorithm in simulation using MATLAB, ROS and Gazebo
- Robot was transverse in circular path to see the decrease of uncertainty of landmark position when it sees multiple times

Estimating Landmark Features and Modeling their Noise, UNC Charlotte   Jan 2017 to May 2017
Distributions for Mobile Robot Localization

- Implemented a localization filter using the Extended Kalman Filter algorithm
- The localization filter estimated the pose i.e., orientation and position, of the robot within the global coordinate system
- Localization filter was implemented in MATLAB and was simulated using the Gazebo virtual machine using ROS libraries

Digital Controllers design, UNC Charlotte   Jan 2017 to May 2017

- Designed two different digital controllers, classical digital compensator and state variable observer & controller compensation
- PID compensator was used for classical digital compensator
- State variable technique outperformed by meeting all the design constraints and goals when compared to classical compensator

Pure Pursuit Controller, UNC Charlotte   Jan 2017 to May 2017

- Path follower Robot was implemented using pure pursuit path following algorithm
- Computed velocity commands (linear and angular) that are provided to the robot motor controller for the purpose of following a pre-specified path
- The Robot had to move on any given path coordinates, starting and end points
- Tools used were MATLAB, ROS and Gazebo