SURAJ MANIYAR

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EDUCATION

- **North Carolina State University, Raleigh, North Carolina**   Expected Dec 2018

  Master of Science in Electrical Engineering,   GPA: 3.66/4.0

  Courses :- **Data Science | Digital Imaging Systems | Probabilistic Graphical Models for Signal Processing and Computer Vision | Spatial and Temporal Data Mining | Design of a Robotic Computer Vision System for Autonomous Navigation | Computer Vision**

- **Veermata Jijabai Technological Institute (VJTI), Mumbai, India**   Jul 2017

  Bachelor of Technology in Electronics Engineering,   GPA 7.72/10.0

  Courses :- **Signal Processing** | **Robotics** | **Image Processing** | **Computer Programming** | **Embedded Systems** | **Control Systems**

INTERNSHIP

Model Predictive Control Technique for an Inverted Pendulum   Dec 2015

Centre of Excellence in Complex and Non-linear Dynamical Systems (CoE-CNDS), V.J.T.I., Mumbai

- **Optimized** a **MATLAB Simulink** code for an inverted pendulum using Model Predictive Control technique
- Implemented the optimized code on TMS 320F28335 Digital Signal Processor

TECHNICAL SKILLS

Programming Languages	Tools	Other softwares	Hardware Knowledge
- **Python**	- Python scikit-learn	- Windows	- Raspberry Pi
- C++	- Numpy, Scipy, Pandas	- **Linux (Ubuntu, Debian)**	- Beaglebone Black
- Java	- **Tensorflow**	- MATLAB	- NI-myRio development board
- **Linux scripting**	- **Keras**	- LabVIEW	- AVR series microcontrollers

PROJECTS

Design of a Robotic Computer Vision System for Autonomous Navigation   Jan 2018 – May 2018

Integration Head - SLAM Team (Demo, Integration and Documentation Committee)

- Implemented **VINS-Mono** and **ORB SLAM2** algorithms, separately, for an Arial robot blimp for mapping a construction site
- Used **NVIDIA Jetson TX1** development board and **monocular camera** with an **IMU** for **localizing** and **mapping** the surrounding which used **Point Cloud Library (PCL)** and **Robot Operating System (ROS)**
- **Co-ordinated** with Hardware and Context Awareness teams to integrate their work to develop a fully functional working prototype

Deep Visual Attention Prediction   Apr 2018

- Implemented a paper titled 'Deep Visual Attention Prediction' which predicts human eye fixation on view-free scenes incorporating multi-level saliency predictions
- Ported the code from Caffe to Keras with an accuracy of 64% on the Validation Dataset

Respiratory Rate Estimation   Dec 2017

- Estimated the respiratory rate of a human based on accelerometer data, heart rate and body temperature
- Used **Ridge Regression, Neural Networks** and **Hidden Markov Model** (HMM) separately to predict the Respiratory Rate

Foraminifera Image Segmentation using Markov Random Field (MRF)   Dec 2017

- Used **MRF** based approach called **Graph-Cut** to segment the chambers of a foraminifera (marine species) from its **edge probability map**
- Segmented the chambers and the aperture in Foraminifera images to identify different types of species

A Comprehensive Approach to Stock Trading using Machine Learning   Sept 2016 - May 2017

- Aimed at **recommending solutions** to users investing in stock market based on **fundamental** and **technical analyses**
- Optimized user's portfolio and implemented technical analysis using **Neural Networks** and **Reinforcement Learning** separately to suggest actions (buy, sell or hold) to the user

Task Learning Robot   Aug 2015 - Nov 2015

- Developed an approach to teach a task to a robotic arm which could be replicated as and when required
- Interfaced industrial robotic arm **Scorbot-ER VII** with **NI-myRio** development board with a user-friendly **LabVIEW** interface
- Shortlisted in the **top 20 teams** for a **National Level Contest**, **NIYANTRA**, organised by National Instruments, India

CO-CURRICULAR ACTIVITIES

- Senate member of **Society of Robotics and Automation (S.R.A.), V.J.T.I.** which deals with robotics, machine vision and automation
- Managed and conducted workshops with a team of 10, to teach students about line-following robots, embedded systems, Bluetooth technology and Internet of Things (IoT)