NIRMAL ELAMON

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EDUCATION

Master of Science in Electrical Engineering **August 2017 - Present**
North Carolina State University, Raleigh GPA :3.93/4.0

Bachelor of technology in Electronics and Communication **July 2013-May 2017**
Amrita Vishwa Vidyapeetham, Amrita University GPA:3.7/4.0

RELEVANT COURSES

• Computer Vision • Design of a robotic computer vision system for autonomous navigation • Practical Deep Learning with PyTorch • Probabilistic Graphical Models for Signal Processing and Computer Vision • Machine Learning • Special Topics in Data Science • Information Theory and Coding • Statistical signal processing • Numerical methods for statistics

TECHNICAL SKILLS

- **Skills:** Experience in Computer Vision,object detection and tracking,Neural networks,ROS,Rviz,Natural Language Processing,Deep Learning,Linear Classifiers,K-Means Clustering,SVM,logistic regression
- **Software**:Python,OpenCV,C,C++,MATLAB,CUDA,Git,SOLIDWORKS,SketchUp,Octave,ImageJ
- **Libraries**: PyTorch,theano,numpy,scipy,scikit learn,pandas,matplotlib
- **Framework**: Tensorflow,Keras,MXNet

WORK EXPERIENCE

Computation Sciences and Deep Learning intern at The Jackson Laboratory **Ongoing**

- Developing Deep learning algorithms for image segmentation of retinal cells of mice which will be used for extracting valid information like geometry, nuclei position, etc of the cell.

ACADEMIC PROJECTS

CFNet based online object tracking using DPM approach **March 2018**
Developed a Deformable Part Based model for tracking an object in a video using Correlation filter based siamese convolutional neural network and obtained an accuracy of 96.62%

Conversion of a mathematical formula to its corresponding LaTex source using RNN **November 2017**
Implemented an IM2LATEX model using TensorFlow for converting the image of a mathematical formula to its corresponding Latex source using Convolutional Neural Network for feature extraction followed by Recurrent Neural Network (RNN) with GRU layers and obtained an accuracy of 81%.

Respiratory Rate estimation using Hidden Markov Model and Neural Network **November 2017**
Developed a Hidden Markov model for estimating the respiratory rate of an individual using real time high-dimensional data and obtained an RMSE of 2.01. Implemented the same model using a Neural Network after dimensionality reduction without the temporal dependencies and obtained an RMSE value of 3.8.

Face detection using Gaussian distribution, T distribution and Factor Analysis **February 2018**
Implemented a probabilistic model that can detect a face in an image using Gaussian distribution, T distribution, mixture of gaussian, mixture of T and Factor Analysis. Compared the efficiency of all these models using ROC curve and Factor Analysis outperformed others

A Robotic Computer Vision system for Autonomous Navigation **Ongoing**
Developing a robotic blimp that can interact with a Husky ground vehicle through ROS messages which can navigate autonomously using NVIDIA JETSON TX2 and Raspberry pi zero

Image Compression using K-Means Clustering **September 2017**
Developed a K-Means Clustering and Vector Quantization method for compressing an image. Evaluated the efficiency of the compressed image using Rate-Distortion analysis and obtained a compression of 11.7% .

3-D model reconstruction from a single perspective image **September 2017**
Implemented the paper 'Single view Metrology' by developing a model that calculates the 3-D affine measurements from a single perspective view of an image using vanishing points and texture mapping with homographic matrix.

PUBLICATION

R. K. Megalingam, N. Vignesh, V. Sivanantham, N. Elamon, M. S. Sharath kumar and V. Rajith, "**Low cost robotic arm design for pruning and fruit harvesting in developing nations**," ***2016 10th International Conference on Intelligent Systems and Control (ISCO)***, Coimbatore, 2016, pp. 1-5.