









Research Interest

- My current interest and focus is on applying machine learning and deep learning for scene understanding which includes scene classification, detection, recognition and segmentation.

Education

- **Indian Institute of Science** Bangalore, Karnataka
Master of Engineering in Signal Processing 2010 - 2012
 - Master Thesis: Complex Network Approach for Analysis of Biomedical signals
 - CGPA: 5.8/8.0
 - Advisor: Prof. D. Narayana Dutt
- **Sri Jayachamarajendra College of Engineering** Mysore, Karnataka
Bachelor of Engineering in Electronics and Communication 2005 - 2009
 - Percentage: 71.14%

Work Experience

- **Samsung R&D India** Bangalore
Technical Lead, Media Analytics and Recognition Team 2016-Present
 - **Project: Semantic Segmentation of Sky and Non-sky regions in an image using Fully Convolutional Neural Network**  [blog](#)
 - * Fine tuned the weights of the pretrained VGG-16 net, for the task of sky/non-sky segmentation. Accuracy achieved on validation and test dataset >95%
 - * Investigated the features learnt in each layer of the network
 - * Experimentation on using sky segmentation map as prior for horizon detection
 - * Languages & Tools used - Python, Caffe
 - **Project: Nearest Neighbor Image retrieval using GIST**  [cmd](#)  [code](#)  [t-SNE](#)
 - * Developed code for extracting GIST descriptor for images
 - * Evaluated GIST descriptor for task of image retrieval
 - * Demonstrated how GIST descriptor can be used for detection of duplicate images
 - * Languages & Tools used - C++, OpenCV, MATLAB
- Lead Engineer, AVI Solutions Team* 2014-2016
 - **Project: Histogram of Oriented Gradients for Pedestrian Detection**  [code](#)  [t-SNE](#)
 - * Code developed for extracting HOG features, detection and for filtering detection windows
 - * Trained SVM on augmented INRIA dataset
 - * Demonstrated how hard negative mining and adding non maximum suppression module helps in improving the accuracy of object detection
 - * Languages & Tools used - C++, OpenCV, Python, SVMLight
 - **Project: Combining Sketch and Tone for Pencil Drawing Production**  [software](#)  [code](#)
 - * Code developed for color pencil sketch effect for images which mimicks human style of pencil drawing
 - * Designed a GUI using QT
 - * Languages & Tools used - C++, OpenCV, QT

○ **Project: Auto Image Enhancement (Galaxy S6 onwards)**

- * Developed algorithm for detection of low-light/backlight images
- * Developed algorithm for detection of poorly lit faces in an image
- * Complete architecture design of auto image enhancement engine
- * Complete JNI framework design & development for communicating between application and engine
- * Languages & Tools used - C, Matlab

Senior Software Engineer, Multimedia Solutions Team

2012-2014




○ **Project: Photo Editor, Best Photo.**

- * Developed red eye correction algorithm. GUI developed using Matlab GUIDE for quick demo
- * Implemented image blur detection and ranking algorithms
- * Implemented bilinear resizer module for less memory architecture in Photo Editor
- * Optimization of Photo Editor effects using POSIX threads
- * Languages & Tools used - C, C++, Matlab

○ **Project: Touch Focus (Galaxy S5 onwards)**

- * Complete JNI framework design & development for communicating between application and engine

Hobby Projects

1. Implementation of Canny Edge Detector. Languages & Tools used - C++, OpenCV.  [code](#)
2. Implementation of Bilateral filter. Languages & Tools used - C++, OpenCV.  [code](#)
3. QT based GUI Application for experimenting edge detectors such as Sobel & Canny, blurring filters such as homogeneous, median, Gaussian & bilateral. Languages & Tools used - C++, OpenCV, QT.  [software](#)
4. Image Watermarking Algorithm based on DWT DCT and SVD. Languages & Tools used - MATLAB

Recognition

1. Awarded Galaxy S5 for the success of Touch Focus USP
2. Awarded Employee of the month - Jan 2016

Relevant Coursework

Signal Processing Courses: Digital Image Processing, DSP System Design, Biomedical Signal Processing, Speech Information Processing

Mathematical Courses: Linear Algebra, Probability & Random Process, Detection & Estimation Theory, Mathematics for Electrical Engineers

Deep Learning (ongoing): Learning from Data (Abu Mostafa), Machine Learning (Andrew Ng), UFLDL (Stanford).

Skills

Programming Languages: C, C++, MATLAB, Python

Tools & Framework: Caffe Deep Learning Framework, Microsoft Visual Studio, QT, Eclipse, Android JNI/NDK

Work Productivity Tools: Vim, tmux