

## Research Interest

- My current interest and focus is on applying deep learning for scene understanding which includes scene classification, object 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
- **Sri Jayachamarajendra College of Engineering** Mysore, Karnataka  
*Bachelor of Engineering in Electronics and Communication* 2005 - 2009

## Work Experience & Projects

- **Samsung R&D India** Bangalore  
*Technical Lead, Media Analytics and Recognition Team* 2012-Present

### ○ *Deep Convolutional Network for Food Recognition*

- \* Trained Squeezenet model for faster inference and ported on Android devices
- \* Trained Resnet and Inception-v3, Inception-ResNet-v2 models with data augmentation and tweak to the model architecture to improve the recognition accuracy
- \* State of the art results in Food-Recognition when compared with previously reported results
- \* Paper submission for ICIP-2017 in progress
- \* Data collection and expansion of models to support Indian Food Categories
- \* Languages & Tools used - Python, Caffe, Tensorflow

### ○ *Deep Convolutional Network for Image Aesthetics*

- \* Trained 2-column VGG-16 model and GoogleNet model with data augmentation that includes data oversampling and multiple input crops
- \* Application developed to classify a given image into high and low quality
- \* Languages & Tools used - Python, PyQt, Caffe

### ○ *Fully Convolutional Network for Segmentation of Sky and Non-sky regions* 🌐 [blog](#)

- \* Trained fully convolutional VGG-16 model. Sky segmentation map used as prior for horizon detection in an image
- \* Languages & Tools used - Python, Caffe

### ○ *Nearest Neighbor Image Retrieval using GIST* 🌐 [code](#)

- \* Developed code for extracting GIST descriptor for images
- \* Demonstrated how GIST descriptor can be used for detection of duplicate images in Gallery
- \* Languages & Tools used - C++, OpenCV, MATLAB

### ○ *Combining Sketch and Tone for Pencil Drawing Production* 🌐 [code](#)

- \* Code developed for color pencil sketch effect for images which mimicks human style of pencil drawing
- \* Application development for Color Pencil Sketch
- \* Languages & Tools used - C++, OpenCV, QT

### ○ *One Touch 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





### ○ *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

### ○ *Touch Focus (Galaxy S5 onwards)*

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

## Learning Projects

1. Implementation of RNN and LSTM from scratch for character prediction. Languages & Tools used - Python, Numpy  [code-rnn](#)  [code-lstm](#)
2. Trained a SVM model for Pedestrian detection using Histogram of Oriented Gradients feature. Languages & Tools used - C++, OpenCV, Python  [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](#)

## Honors & Awards

1. Awarded Employee of the month - Jan 2016
2. Recognition for contribution to Touch Focus USP solution in Galaxy S5

## Relevant Coursework

**Deep Learning:** Learning from Data (Caltech), Machine Learning (Stanford), UFLDL (Stanford), Stanford CS231 course

**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

## Skills

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

**Tools & Framework:** Caffe, Tensorflow (Novice), Microsoft Visual Studio, QT, Eclipse, Android JNI/NDK

**Work Productivity Tools:** Vim, tmux