

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
 - 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 Research Institute India** Bangalore
Technical Lead, Media Analytics and Recognition Team 2012-Present
 - **Deep Convolutional Network for Food Recognition**
 - * Trained Squeezenet model for deployment on Android phones. Accuracy: 69.5%
 - * Trained Resnet-50, Resnet-101, Resnet-152 models with data augmentation and tweak to the model architecture to improve the recognition accuracy. Resnet-152 accuracy: 78.5%
 - * Dataset: Food-101. Languages & Tools used - Python, Caffe
 - **Deep Convolutional Network for Image Aesthetics**
 - * Trained 2-column VGG-16 model and GoogleNet model with data augmentation including data oversampling and multiple input crops. GoogleNet accuracy: 83.7%
 - * Application developed to classify a given image into high and low quality
 - * Dataset: AVA. Languages & Tools used - Python, PyQt, Caffe
 - **Fully Convolutional Network for Segmentation of Sky and Non-sky regions in an image** [blog](#)
 - * Trained fully convolutional VGG-16 model. Sky segmentation map used as prior for horizon detection in an image
 - * Dataset: SIFT flow. 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

Hobby 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](#)
4. Implementation of Canny Edge Detector, Bilateral filter. Languages & Tools used - C++, OpenCV [🔗 code](#)

Recognition

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

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 Deep Learning Framework, Microsoft Visual Studio, QT, Eclipse, Android JNI/NDK

Work Productivity Tools: Vim, tmux