

Research Interest

- My current interest and focus is on applying machine learning and deep learning techniques to analyze images/videos for the problem of recognition, segmentation and scene understanding. Also, use deep networks to learn and combine features over multiple modalities

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](#)
 - * Development: Languages & Tools used - Python, Caffe Deep Learning Framework
 - * Aim of this project is to:
 - Understand how Fully Convolutional network enables end to end dense learning
 - Fine tune the weights of the pretrained model, appreciate how transfer learning enables to address different computer vision problems with reasonable amount of data
 - Investigate the features learnt in each layer of the network
 - Experimentation on using sky segmentation map as prior for horizon detection
 - Project: Nearest Neighbor Image retrieval using GIST descriptor [🔧 Command Line Tool](#)
 - * Development: Languages & Tools used - C++, OpenCV, MATLAB
 - * Aim of this project is to:
 - Evaluate GIST descriptor for task of Image retrieval
 - Demonstrate how GIST descriptor can be used for detection of duplicate images
- **Samsung R&D India** Bangalore
Lead Engineer, AVI Solutions Team 2014-2016
 - Project: Histogram of Oriented Gradients for Pedestrian Detection
 - * Development: Languages & Tools used - C++, OpenCV, SVMLight
 - * Aim of this project is to:
 - Demonstrate my understanding in Support Vector Machines by applying to a computer vision problem
 - Project: Combining Sketch and Tone for Pencil Drawing Production. [🖥 Software](#) [📄 Code](#)
 - * Development: Languages & Tools used - C++, OpenCV, QT
 - A system to produce pencil drawings from natural images.

- This system mimicks human style of pencil drawing
- Designed a GUI using QT

○ Project: Auto Image Enhancement (Galaxy S6 onwards)

- * Design and development: Languages used - C, Matlab
 - Algorithm for detection of low-light/backlight images
 - Algorithm for detection of poorly lit faces in an image
 - Colorfulness measurement in natural images
- * Complete architecture design of Auto Image Enhancement Engine
- * Complete JNI framework design & development for communicating between application and engine

○ Project: Touch Focus (Galaxy S5 onwards)

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




- **Samsung R&D India**
Senior Software Engineer, Multimedia Solutions Team

Bangalore
2012-2014

○ Project: Photo Editor, Best Photo.

- * Design and development: Red eye correction algorithm. GUI developed using Matlab GUIDE for quick demo
- * Design and development: Measurement of blur in an image. Algorithms implemented from two IEEE papers. Languages used: C++
- * Implementation of bilinear resizer module for less memory architecture - Insert emoticon effect in Photo Editor. Languages used: C
- * Optimization of Photo Editor effects using POSIX threads

Pet 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 Sobel & Canny Edge Detectors. Languages & Tools used - C++, OpenCV, QT.  [Software](#)

Relevant Coursework - IISc, Bangalore

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

Languages: C/C++, MATLAB, Python, QT, Android JNI

Tools: Microsoft Visual Studio, Eclipse, Android NDK, Vim

Miscellaneous: Excellent troubleshooting and debugging skills