

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](#)
 - * Development: Languages & Tools used - Python, Caffe
 - * 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 🔧 [Executable](#) 🌐 [Code](#)
 - * 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. 🖼️ [t-SNE](#)
- *Lead Engineer, AVI Solutions Team* 2014-2016
 - Project: Histogram of Oriented Gradients for Pedestrian Detection 🌐 [Code](#) 🖼️ [t-SNE](#)
 - * Development: Languages & Tools used - C++, OpenCV, Python, SVMLight
 - * Aim of this project is to:
 - Demonstrate my understanding of Support Vector Machines by applying to a computer vision problem
 - To understand how hard negative mining and adding non maximum suppression module helps in improving the accuracy of object detection
 - 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

Senior Software Engineer, Multimedia Solutions Team

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 module 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 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. Galaxy S5 for the success of Touch Focus USP
2. 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