


## 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, Vim

**Miscellaneous:** Excellent troubleshooting and debugging skills