Nrupatunga

Deep Learning Research Engineer, Whodat™

Research interests: Image and Video Processing, Computer Vision, Machine Learning, Deep Learning

Education

2010-2012   **Masters of Engineering in Signal Processing**, *Indian Institute of Science*, Bangalore, CGPA: 5.8/8.0.
- Master Thesis: Complex Network Approach for Analysis of Biomedical signals

2005-2009   **Bachelor of Engineering in Electronics and Communication**, *Sri Jayachamarajendra College of Engineering*, Mysore.

Experience

2017 - Present   **Deep Learning Research Engineer**, *Whodat™*, Bangalore.
- My research is focussed on applying deep learning for understanding of indoor/outdoor scenes and adding semantic information into current visual SLAM pipeline to improve the experience in AR applications

2016-2017   **Technical Lead**, *Samsung R&D India*, Bangalore.
- Deep Convolutional Network for Food Recognition
  - Trained Squeezenet model (accuracy = 69%) and ported on to mobile.
  - Trained ResNet, Inception models improvement in accuracy by adopting data augmentation, model ensembling techniques
  - 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
  - Trained fully convolutional VGG-16 model using SIFT flow dataset
  - Sky segmentation map used as prior for horizon detection in an image
  - Languages & Tools used - Python, Caffe

2014-2016   **Lead Engineer**, *Samsung R&D India*, Bangalore.
- Nearest Neighbor Image Retrieval using GIST Code
  - Developed code for extracting GIST descriptor for images and demonstrates its use in 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 deveopment for Color Pencil Sketch
  - Languages & Tools used: C++, OpenCV, QT
- One Touch Auto Image Enhancement (Commercialized in all flagships after Galaxy S6)
  - Developed algorithm for detection of low-light/backlight, poorly lit face images
  - Complete architecture design of auto image enhancement engine
  - Languages & Tools used - C, Matlab

2012-2014   **Senior Software Engineer**, *Samsung R&D India*, Bangalore.
- 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
  - Languages & Tools used: C, C++, Matlab
- Touch Focus (Galaxy S5 onwards)
  - Complete JNI framework design & development for communicating between application and engine

Personal Projects

Deep Learning & Machine Learning.
- Python implementation of GOTURN single object tracking Code
- Implementation of RNN and LSTM from scratch for character prediction. Languages & Tools used - Python, Numpy Code
- Trained a SVM model for Pedestrain detection using Histogram of Oriented Gradients feature. Languages & Tools used - C++, OpenCV, Python Code

Relevant Coursework

Deep Learning	Learning from Data (Caltech), Machine Learning (Stanford), UFLDL (Stanford), Stanford CS231 course
Signal Processing	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

Honors

Awarded Employee of the month - Jan 2016

Awarded Galaxy S5 for the effort in success of Touch Focus USP

Skills

Languages	C, C++, Python, Matlab
Tools/ Frameworks	Caffe, Tensorflow, Microsoft Visual Studio, QT, Eclipse, Android JNI/NDK
Productivity	Vim, Tmux