

SHRUTHI NARASIMHE GOWDA

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EDUCATION

MS – Electrical and Computer Engineering
[Sep 2010-Sep 2012]
(Graduated '*cum laude*', a latin term for '*with honor*')

UPC (Universitat Politècnica de Catalunya), Spain
UCL (Université Catholique de Louvain), Belgium

GPA - 8.14/10

BE - Electronics and Communication Engineering
[Jun 2006-Jun 2010]

B.M.S College of Engg,
VTU, India

Grade - 86%
(*First Class with Distinction*)

WORK

- NI VISION, National Instruments (NI) R&D, India - **Algorithm Engineer** [Jan 2013 till present]
- Image and Signal Processing group(ISP), UCL, Belgium - **Research Assistant** [Jan 2012-Sep 2012]
- DRDO (Defense Research and Development Organization), India – **Intern** [Jan 2010-Jun 2010]
- M.P. Birla Institute of Fundamental Research, India - **Research Associate** [Sep 2007-Sep 2008]

AREAS AND SKILLS

Digital Image Processing, Computer Vision, Machine Learning, Pattern Matching

3D Vision, Calibration, PCL Analysis

Programming Languages : C & C++

Simulations : LabVIEW, MATLAB, Simulink

Open Source : OpenCV, OpenGL, PCL

Hardware Languages : VHDL, VERILOG

PROJECTS

- NI VISION, National Instruments (NI) R&D, India

3D Vision research [Mar 2016 - present] – Working on calibration (Single camera and Stereo camera) to obtain depth map. Analyzing depth map and point cloud data to provide 3D Analysis features.

Pattern Matching and Defect Detection [Aug 2015 - Jan 2016] – Implemented a robust Pyramidal-based Pattern Matching algorithm with three approaches: Grayscale, Gradient and Low Discrepancy Sampling matching. Implemented a defect map to detect wide variety of defects.

Feature Detection and Matching [Aug 2014 – June 2015] – Implemented improved Harris Corner Detector, Feature Descriptors and a robust Feature Matching algorithm for achieving Feature Correspondence between images. The Match algorithm also provides Homography and the estimated Pose. Product released on August 2015.

Barcode Localization and Decoding [Sep 2013 – Aug 2014] - Researched, prototyped and productized 1D Barcode feature that detects multiple barcodes in an image using segmentation and decodes it using standard Barcode decoding logic. Product released on August 2014.

Feature Extraction and Classification [Jan-2014 – June 2014] - **Mentored** an intern on a research project on feature extraction. Experimented with HOG & LBP feature descriptors and SVM & SOM classifiers for Object Detection applications.

Object Tracking [Jan 2013 - Aug 2013] - Researched, prototyped and productized tracking feature that uses Continuously Adaptive Mean Shift algorithm to track multiple objects across frames and is invariant to scale, shape and rotational changes of the object. Product released on August 2013.

- UCL, Belgium

MASTER THESIS: Virtual Viewpoint Reconstruction in a Multi-Camera Network [Jan 2012-Sep 2012]

The Thesis proposes a method towards reconstruction of dynamic regions in a scene in any virtual viewpoint in a multi-view environment using Epipolar Geometry and Color Camera Calibration and View Interpolation.

Automated Electrocardiogram Prediction using Neural Networks [Sep 2011-Nov 2011]

Implemented several regression models, namely Linear Regression, kNN Regression and Radial Basis Function Network models, to predict one beat of an ECG signal from a given one wave of the signal.

- Center for Language and Speech Technologies and Applications (TALP), UPC, Spain

Novel Feature Extraction Methods for Speech Recognition [Feb 2011-Apr 2011]

Implemented several regression models, namely Linear Regression, kNN Regression and Radial Basis Function Network models, to predict one beat of an ECG signal from a given one wave of the signal.

- Defense Research and Development Organization, India

THESIS: Fixed point IF Filter implementation on FPGA for Radar Signal Processing [Jan 2010- Jun 2010]

INTERNAL PUBLICATIONS

- *“ Defect Detection using different Computer vision Algorithms and Finding a Generalized Defect Inspection System using Deep Learning ”*, NITech Conference 2016, NI R&D, Austin
- *"Analysis of Superpixels on existing Vision Algorithms"*, NITech Conference 2014, NI R&D, Austin
- *"Steganography in images using DWT and Skin Detection Biometrics"*, NITech 2013, NI R&D, Austin

DEMOS & PET PROJECTS

- **3D Tracking**: Combined Object Tracking with Stereo Vision and designed a live 3D tracking demo.
- **Augmented Reality using PTAM**: Used PTAM (Parallel Tracking & Mapping) to do 3D mapping of the surroundings and wrote OpenGL code for AR applications
- **Defect Detection System using Deep Learning**: Used CNN (Convolutional Neural Network) architecture to train and classify images as defects.

AWARDS AND HONOURS

- **ENGINEERING EXCELLENCE AWARD** (2016) – In Recognition of excellent work and dedication in bringing out innovative ideas and products in NI R&D - by National Instruments, Austin, Texas
- **ROOKIE OF THE YEAR AWARD** (2013) – In Recognition for the outstanding achievement and contribution of an employee to the company - by National Instruments, Austin, Texas
- **ERASMUS MUNDUS SCHOLARSHIP** (2010-2012) – The most prestigious fellowship offered by European Union to 10 International Students every year; to study in Consortia of universities across Europe
- **PRATIBHA PURASKAR** (2006) – honor by the Indian Govt. for the top 0.1% of top scorers in academia
- **CET** (2006) - Common Entrance Test for Engineering Entrance Exam –Rank 305 –among ~150,000 students