Sai Parthasarathy Miduthuri

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Education

Stony Brook University — **Stony Brook, New York**
Masters in Computer Science — *Aug 2017 - Dec 2018*

IIIT-Hyderabad — **Hyderabad, India**
B.Tech Electronics and Communication Engineering — *Aug 2011 - Apr 2015*

Work Experience

Tonbo Imaging — **Bangalore, India**
Engineer, FPGA and Embedded Software Development — *May 2015–June 2017*

- Played a crucial role in developing the IR video processing pipeline for cooled thermal systems
- Developed adaptive video contrast enhancement for use in cooled thermal imaging systems
- Created bad pixel identification algorithm to find bad pixels in MWIR video with 99% accuracy without manual intervention
- Designed communication software and hardware for intra-system communication
- Devised video streaming software for high-FPS video over Ethernet, which improved maximum throughput by 50%

Projects

- **Linux Kernel Interface from FPGA to Processor for Triple-Buffered Video** - *Tonbo Imaging, March-May 2017*
  Developed linux kernel driver and multi-threaded application to stream video from an embedded device at a maximum frame rate of 90 FPS, which reduced frame drops in streaming to 2% and increased throughput by 50%.
- **Video Stabilization Through Time-Series Registration** - *Course Project in Medical Image Processing, April 2015*
  Implemented time-series registration of microscopic iris video frames to stabilize video and observe flow of leukocytes in the iris. Used probability-mesh based deformations to register frames with least possible visual distortion and drift error.
- **Image Segmentation Using Active Contour Models** - *Course Project in Medical Image Processing, March 2015*
  Implemented multiple variants of Snakes Active Contour Models in order to understand basics of contour-based image segmentation. Evaluated their performance upon different types of datasets by running these algorithms with various contour movement forces.
- **3D Mapping Interface Using Proximity Sensors** - *B.Tech. Project, January 2014 to March 2015*
  Created a touch-less interface using IR sensors to generate a height mapped surface and devise a multi-purpose game controller. Designed a prototype using an HMM-based gesture recognition system with 88% accuracy.
- **Graph Cut Using SLIC Superpixels** - *Hobby Project, October 2017*
  Implemented user-interactive Binary Segmentation in Images on OpenCV by culstering image pixels into superpixels using the SLIC algorithm and performing Graph Cut upon the graph formed by the clusters, which improved edge smoothness for foreground and allowed user-marked seeds for foreground and background to be interpreted more liberally.
- **Investigation To Find Fraud Using Enron Dataset** - *Course Project in Udacity's Intro to ML, Aug-Sep 2017*
  Experimented with Decision Tree, Random Forest and SVM algorithms with appropriate feature selection to accurately predict employees committing fraud using Enron financial and e-mail dataset. Implemented a design to predict fraud with $\approx$ 84% accuracy using a Random Forest model.

Technical Skills

PROGRAMMING LANGUAGES C (Proficient), C++ (Basic), Java (Basic), Python (Proficient)
TOOLS MATLAB, OpenCV, ITK, Git

Publications

A Dome-Shaped Interface Embedded with Low-Cost Infrared Sensors for Car-Game Control by Gesture Recognition, *Jasmine Bhanushali, Sai Parthasarathy Miduthuri, Kavita Vemuri*
Human Computer Interaction International Conference 2015, Los Angeles

Academic Achievements

- Research Award for research performed in Bachelor's Course, at IIIT Hyderabad
- Dean's Merit List Award for academic excellence in Bachelor's Course, at IIIT Hyderabad