PAVAN CHENNAGIRI

Indian Institute of Science, Bangalore

CONTACT INFORMATION

Room 2.25, Signal Processing Building,
ECE Department, IISc Bangalore - 560012
https://pavancm.github.io

Email : pavan.madhusudana@gmail.com
pavan@iisc.ac.in

RESEARCH INTERESTS

Image Processing, Computer Vision

EDUCATION

Indian Institute of Science, Bangalore **Aug 2016 - Present**
Master of Technology (Research) in Electrical Communication Engineering

- **Thesis :** Quality Assessment for Panoramic Images
- **Relevant Courses :** Random Process, Linear and Non-Linear Optimization, Information Theory, Machine Learning, Computer Vision, Advanced Image Processing

National Institute of Technology, Karnataka, Surathkal **July 2012 - May 2016**
Bachelor of Technology in Electronics and Communication Engineering
Class Rank - 3 out of 106 Students

- **Thesis :** Video Magnification for non-intrusive heart monitoring
- **Relevant Courses :** Linear Algebra, Stochastic Processes, Digital Signal Processing, Pattern Recognition, Analog and Digital Electronics, Computer Architecture, Analog and Digital Communication

SCHOLASTIC ACHIEVEMENTS

- Finalist (selected amongst 54 teams across India) in **Qualcomm Innovation Fellowship, India 2017**
- Member of the team which secured 4^{th} position globally in **Signal Processing Cup 2015** conducted by IEEE Signal Processing Society
- Selected in the **Regional Mathematics Olympiad (RMO)** from Karnataka region conducted by Indian Statistical Institute (ISI) Bangalore, during 2011 and 2012.
- Secured *All India rank of 785* (amongst 1,200,000 candidates) in All India Engineering Entrance Examination (AIEEE) 2012.
- Recipient of Ministry of Human Resources Scholarship for being ranked in top 0.1% of AIEEE (2012 - 2016)
- *Ranked 30* (Top 0.1% amongst 150,000 candidates) in State level Engineering Entrance Exam (Karnataka CET)
- Secured 1^{st} *position* in the Karnataka State Class X Secondary Examination (SSLC) in 2010.

RESEARCH PROJECTS

Quality Assessment of Panoramic Images **Aug 2016 - Present**
Advisor: Dr.Rajiv Soundarajan, Electrical Communication Engineering, IISc Bangalore

- Project aimed at establishing a benchmark to evaluate panoramic images as well as panoramic stitching algorithms from human perception viewpoint.
- A panoramic image database was constructed by employing popular stitching algorithms to generate commonly observed distortions. A subjective study was conducted to evaluate this dataset to obtain subjective ratings

Video Magnification for non-intrusive Heart Monitoring **Aug 2015 - May 2016**
Advisor: Dr.Deepu Vijayasenan, Electronics and Communication Engineering, NITK Surathkal

- Project involved developing algorithms to extract vital signs from facial video sequences. Algorithm was built on framework of Eulerian Video Magnification (EVM) algorithm developed to visualize minute changes invisible to naked eyes.
- An application to perform heart rate estimation from facial video in Android platform was developed.

Estimation of human blood pressure from PPG signals **May 2015 - July 2015**
Advisor : Dr.Prasanta Kumar Ghosh, Electrical Engineering, IISc Bangalore

- Project aimed at establishing a functional relationship with Photoplethysmographic (PPG) signal and arterial human blood pressure. Dataset provided by the University of Queensland was used for evaluation. This was a cuffless based estimation and multiple regression models were trained to analyze this relationship.

Heart Rate Monitoring during physical exercise using wrist type Photoplethysmographic (PPG) signals **December 2014**
Advisor : Dr.Prasanta Kumar Ghosh, Electrical Engineering, IISc Bangalore

- Part of the team which worked to develop an algorithm to get accurate heart rate values from wearable PPG signals while performing physical exercises. Project undertaken as a part of Signal Processing Cup - 2015 conducted by Signal Processing Society, IEEE
- The team was placed 4^{th} globally and the results were published in Signal Processing Letters

Addressing Waveforms to reduce power dissipation in passive matrix Liquid Crystal Displays (LCD) **May 2014 - July 2014**
Advisor : Prof.T N Ruckmongathan, Raman Research Institute, Bangalore

- Project dealt with studying the effect of various waveforms accounting for power dissipation associated with drive electronics in passive matrix LCDs. A real time system was designed for assessing power dissipation in LCD drivers.

PUBLICATIONS

- Navaneet K. Lakshminarasimha, **Pavan C. Madhusudana**, Pradyumna Suresha, Vijitha Periyasamy, and Prasanta Kumar Ghosh. **"Multiple spectral peak tracking for heart rate monitoring from photoplethysmography signal during intensive physical exercise."** IEEE Signal Processing Letters 22, no. 12 (2015): 2391-2395.

SKILLS

- Programming: C, Python
- Scientific: MATLAB, OpenCV, Caffe, Theano, LaTeX

TEACHING EXPERIENCE

Tutor - I conducted weekly tutorial classes for the following topics

- *Python Scripting* for juniors under **Peer Mentoring Programme** conducted by ECE Department, NITK during 2015-2016.
- *Engineering Mathematics - II (MA111)* for the students of first year B. Tech Programme at NITK during Jan-May 2015.