

# PAVAN CHENNAGIRI

The University of Texas at Austin

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<b>CONTACT INFORMATION</b>	Laboratory for Image and Video Engineering, Engineering and Education Research Building, 2501 Speedway, Austin, TX- 78712	<i>Email</i> : pavancm@utexas.edu <i>Phone</i> : +1 5129440149 <a href="https://pavancm.github.io">https://pavancm.github.io</a>
<b>RESEARCH INTERESTS</b>	Image and Video Processing, Computer Vision, Machine Learning	
<b>EDUCATION</b>	<b>The University of Texas at Austin</b>	<b>Aug 2018 - Present</b>
	<i>Doctor of Philosophy in Electrical and Computer Engineering</i>	
	<ul style="list-style-type: none"><li>• <b>Advisor</b> : Professor Alan C. Bovik</li></ul>	
	<b>Indian Institute of Science, Bangalore</b>	<b>Aug 2016 - June 2018</b>
	<i>Master of Technology (Research) in Electrical Communication Engineering</i>	
	<ul style="list-style-type: none"><li>• <b>Advisor</b> : Dr. Rajiv Soundarajan</li><li>• <b>Thesis</b> : <b>Quality Assessment for Stitched Images for Virtual Reality</b></li><li>• <b>Relevant Courses</b> : Random Process, Linear and Non-Linear Optimization, Information Theory, Machine Learning, Computer Vision, Advanced Image Processing</li></ul>	
	<b>National Institute of Technology, Karnataka, Surathkal</b>	<b>July 2012 - May 2016</b>
	<i>Bachelor of Technology in Electronics and Communication Engineering</i>	
	<b>Class Rank - 3</b> out of 106 Students	<b>GPA - 9.6/10</b>
	<ul style="list-style-type: none"><li>• <b>Advisor</b> : Dr. Deepu Vijayasanen</li><li>• <b>Thesis</b> : Video Magnification for non-intrusive heart monitoring</li></ul>	
<b>RESEARCH EXPERIENCE</b>	<b>Quality Assessment of Stitched Images</b>	<b>Aug 2016 - June 2018</b>
	<i>Advisor: Dr. Rajiv Soundararajan, Electrical Communication Engineering, IISc Bangalore</i>	
	<ul style="list-style-type: none"><li>• Developed an automatic quality assessment algorithm for panoramic images suffering from distortions introduced during the stitching process. Algorithm employed Support Vector Machines (SVM) to learn the mapping between features and quality scores.</li><li>• Constructed a panoramic image database by employing popular stitching algorithms and a subjective study was conducted to evaluate this dataset to obtain subjective ratings.</li><li>• The scores from the developed algorithm correlated very well with human scores obtained during subjective study.</li></ul>	
	<b>Video Magnification for non-intrusive Heart Monitoring</b>	<b>Aug 2015 - May 2016</b>
	<i>Advisor: Dr. Deepu Vijayasanen, Electronics and Communication Engineering, NITK Surathkal</i>	
	<ul style="list-style-type: none"><li>• Worked on algorithm to extract vital signs from facial video sequences. Algorithm motivated from Eulerian Video Magnification framework which captures minute changes invisible to naked eyes.</li><li>• Algorithm was deployed on Android platform to perform heart rate estimation from facial video in real time.</li></ul>	

**Estimation of human blood pressure from PPG signals** **May 2015 - July 2015**

*Advisor : Dr. Prasanta Kumar Ghosh, Electrical Engineering, IISc Bangalore*

- Worked on 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<sup>th</sup> 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*

- Part of the project which 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**

- **Pavan C. Madhusudana** and Rajiv Soundararajan. "**Quality Assessment of Stitched Images for Virtual Reality.**" *IEEE Transactions in Image Processing*, submitted June 2018.
- 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* December 2015.

**SKILLS**

- Programming: C, Python, Embedded C, Java
- Scientific: MATLAB, OpenCV, Caffe, Theano, Keras, L<sup>A</sup>T<sub>E</sub>X

**LEADERSHIP SKILLS**

- *Electrical and Electronics Committee* - core committee member - incharge of electronics events during Engineer - 2015 (Annual technical festival of NITK Surathkal).
- *IEEE NITK Chapter* - executive member of IEEE NITK student chapter.

**ACHIEVEMENTS**

- Finalist (selected amongst 54 teams across India) in **Qualcomm Innovation Fellowship, India 2017**
- Member of the team which secured 4<sup>th</sup> position globally in **Signal Processing Cup 2015** conducted by IEEE Signal Processing Society
- Selected in the **Regional Mathematics Olympiad (RMO)** from Karnataka state 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 Development 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.
- Secured 1<sup>st</sup> position in the Karnataka State Class X Secondary Examination (SSLC) in 2010.