# Akash Kumar **Maity**

+1 (713) 8159490 @ akashmaity@ymail.com
7315 Brompton Street, Houston, Texas- 77025

Skilled in Research, Computational Imaging, Computer Vision, Signal Processing, Signal Recovery, Data Science, Machine learning, R, Matlab, C/C++, Java. Strong research professional and a current PhD candidate at Rice University. Research Interest in areas of Computational Imaging and Biomedical Signal Processing.

## Education

2018-present **Ph.D. candidate**, ECE, Rice University.
2016-2018 **Masters** in ECE, Rice University.
2012-2016 **Bachelors** in EE, Jadavpur University.

## Research experience

**Present – November 2016** | **Scalable Health Labs , Dr. Ashutosh Sabharwal and Dr. Ashok Veeraraghavan, Rice University**
Research Assistant.
- Evaluated PulseCam- a blood perfusion imaging system towards monitoring wound healing.
- Developed robust techniques to detect motion artifacts in photplethysmography (PPG) signals.

**August 2020 – May 2020** | **Computational Imaging Lab , Dr. Shree Nayar, Snap Inc.**
Summer Internship.
- Developed a robust estimator of vital signs using human face videos.

**August 2019 – March 2019** | **Illumination and Imaging Laboratory , Dr. Srinivasa Narasimhan, Carnegie Mellon University**
Visiting Student.
- Learnt about different photon gating techniques for imaging through a scattering medium.
- Implementing the gating techniques to image blood cells flowing in vessels beneath tissue using light in the visible spectrum.

**July 2015 – May 2015** | **Computational Photography Labs , Dr. Kaushik Mitra, Indian Institute of Technology, Madras**
Summer Intern Research Scholar.
- Collaborated with National Centre for Biological Science, NCBS, Bangalore towards 3-D Segmentation of Liver Tissue Cells.
- Gained experience about different software and techniques to analyze microscopic images.

## Publications

**RobustPPG : Camera-Based Robust Heart Rate Monitoring Using Motion Cancellation**
https://github.com/akashmaity/RobustPPG
Biomedical Optics Express, 2022

**High Resolution Diffuse Optical Tomography using Short Range Indirect Subsurface Imaging**
https://ieeexplore.ieee.org/document/9105173
IEEE International Conference on Computational Photography (ICCP) 2020

**PPGMotion : Model-Based Detection of Motion Artifacts in Photoplethysmography Signals**
https://www.sciencedirect.com/science/article/abs/pii/S1746809422001549?dgcid=author
Biomedical Signal Processing and Control, Elsevier, 2022

Experimental integration of a spatial frequency domain spectroscopy and pulse cam system for quantifying changes in skin optical properties and vasculature among individuals with obesity

https://www.spiedigitallibrary.org/conference-proceedings-of-spie/11211/1121105
Photonics in Dermatology and Plastic Surgery 2020

Multifractal Detrended Fluctuation Analysis of alpha and theta EEG rhythms with musical stimuli

http://www.sciencedirect.com/science/article/pii/S0960077915002556
Chaos, Solitons and Fractals, Elsevier, 2015

Multifractal Detrended Fluctuation Analysis of the Music Induced EEG Signals

http://ieeexplore.ieee.org/document/7322880/
IEEE International Conference on Communications and Signal Processing, 2015

## Skills

**Programming** C, C++, R, Matlab, Python, OpenCV, FIJI, CellProfiler, Inkscape

## Poster Presentations

2019 **Seeing below the skin**, Sao Paulo School of Advanced Science in Modern topics in Bio-photonics, Sao Carlos, Brazil

2018 **ShapeCam : Robust extraction of PPG Shape Using a Camera**, Biomedical Engineering Society Annual Meeting, Atlanta

2017 **Estimation of Spatial Map of Pulse Transit Time with a Camera**, ECE Affiliate's Day, Rice University