

PREETI GOPAL

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PhD scholar

Vision, Graphics and Imaging lab, Dept. of CSE, IIT Bombay

RESEARCH DOMAIN

Image and signal processing, medical image computing, tomographic reconstruction

CURRENT RESEARCH

The aim of my thesis is to develop algorithms for reconstruction of 3D volumes from their Computed Tomography (CT) measurements obtained from sparse projection views and low-dose imaging. The sub-problems I work on include: intelligent grouping of 2D slice measurements, incorporating the use of data-specific information in longitudinal studies and integrating the above in a compressed sensing reconstruction framework.

EDUCATION

IITB-Monash Research Academy Ph.D. in Computer Science & Engineering (IIT Bombay) School of Physics and Astronomy (Monash University) Overall Course GPA: 8.33/10	July 2014 Onwards
Indian Institute of Technology Bombay M.Tech in Electrical Engineering Communications and Signal Processing Overall GPA: 8.70/10	June 2012
Pondicherry Engineering College B.Tech in Electronics and Communications Engineering Overall GPA: 8.83/10	June 2008

INDUSTRY EXPERIENCE

Healthcare Technology Innovation Centre <i>Project Engineer</i>	Aug 2012 - June 2014 <i>IIT Madras Research Park, Chennai</i>
<ul style="list-style-type: none">· Project in-charge for an industry collaborated project in ophthalmic image computing· Developed and implemented algorithms for detection of anatomical and abnormal structures present in retinal images of the eye· Acquired skills in image processing, statistical pattern recognition, graphical interface development, domain understanding in ophthalmic imaging and disease analysis	
Robert Bosch Engineering and Business Solutions Ltd. <i>Associate Software Engineer</i>	July 2008 - Nov 2009 <i>Coimbatore</i>
<ul style="list-style-type: none">· Software development in C for parts of Electronic Control Units in medium weight vehicles	

SKILLS

- **Languages:** C, Python, MATLAB
- **Packages:** OpenCV
- **Operating System:** Linux, Windows

MAJOR COURSES TAKEN

- **During Ph.D:** Algorithms and Complexity, Software Lab, Applied Linear Algebra, Math for Visual Computing, Linear Optimization, Medical Image Computing
- **Online:** Python Data Structures, Python for Machine Learning
- **During Masters:** Digital Signal Processing, Image Processing, Computer Vision, Adaptive Signal Processing, Computer Graphics, Statistical Signal Analysis

PUBLICATIONS

- **Preeti Gopal**, Sharat Chandran, Imants Svalbe and Ajit Rajwade, *Low Dose Tomography: Poisson-Gaussian Convolution-based Reconstruction*, an abstract, International Symposium on Biomedical Imaging (ISBI), 2019
- **Preeti Gopal**, Sharat Chandran, Imants Svalbe and Ajit Rajwade, *Tomography in Longitudinal Studies: Detecting New Structures from Sparse Measurements*, an abstract, International Symposium on Biomedical Imaging (ISBI), 2019
- **Preeti Gopal** and Imants Svalbe, *Spatial domain morphological filtering for interpolation of the Fourier domain*, Pattern Recognition Letters, December 2018
- **Preeti Gopal**, Ritwick Chaudhry, Sharat Chandran, Imants Svalbe and Ajit Rajwade, *Tomographic reconstruction using global statistical priors*, Digital Image Computing: Techniques and Applications (DICTA), December 2017
- **Preeti Gopal**, David Bailey and Imants Svalbe, *Nonlinear Interpolation in the Fourier Domain Guided by Morphologic Filters*, Digital Image Computing: Techniques and Applications (DICTA), December 2017
- **Preeti Gopal**, Sharat Chandran, Imants Svalbe and Ajit Rajwade, *Multi-slice tomographic reconstruction: to couple or not to couple*, Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), December 2016
- **Preeti Gopal**, Ajit Rajwade, Sharat Chandran and Imants Svalbe, *A Comparison of Some Methods for Direct 2D Reconstruction from Discrete Projected Views*, Discrete Geometry for Computer Imagery (DGCI), April 2016
- Sajith K, **Preeti Gopal** and Subhasis Chaudhuri, *Hand Tremor Analysis using Deformable Object Manipulation in a Haptic Environment*, IEEE Point-of-Care Healthcare Technologies (PHT), January 2013

PATENT

- *Method and system for performing ophthalmic image analysis*: Niranjana Joshi, Keerthi Ram, Mohanasankar Sivaprakasam, **Preeti Gopal**, Vaanathi Sundaresan and Garima Gupta at Healthcare Technology Innovation Centre, IITM Research Park, Chennai, 2013