Yash Sanghvi

✉ ysanghvi@purdue.edu • Homepage: sanghviyashiitb.github.io

Research Interests

Computational Imaging, Inverse Problems, Deep Learning

Education

- **Purdue University, West Lafayette, Indiana** *Aug. 2019 - Present*
  GPA: 4.00/4.00
  Graduate Research Assistant
  Advisor: Prof. Stanley H. Chan
- **Indian Institute of Technology Bombay, Mumbai** *July 2013 - July 2018*
  Dual Degree (B.Tech. + M. Tech.) in Electrical Engineering
  CGPA: 9.12/10
  Thesis Title: "Application of Wavelets in Inverse Scattering"
  Advisor: Prof. Vikram M. Gadre

Publications

- Sanghvi, Yash, Abhiram Gnanasambandam, and Stanley H. Chan. **"Photon Limited Non-Blind Deblurring Using Algorithm Unrolling."** currently under review at Transactions on Computational Imaging
- Sanghvi, Yash, Yaswanth Kalepu, and Uday K. Khankhoje. **"Embedding deep learning in inverse scattering problems."** IEEE Transactions on Computational Imaging 6 (2019): 46-56.
- Kalepu, Yaswanth, Yash Sanghvi, and Uday K. Khankhoje. **"Reconstructing Dispersive Scatterers With Minimal Frequency Data."** IEEE Geoscience and Remote Sensing Letters 18.1 (2020): 62-66.

Academic Achievements

- Awarded **Ross Fellowship** for academic excellence from School of Electrical and Computer Engineering, Purdue University *2019*
- Awarded **Undergraduate Research Award [URA-01]** for project titled *'Chirp Signal Parametrization using Particle Swarm Optimization'* *2015*

Selected Work and Research Experience

- **Embedding Deep Learning in Inverse Scattering** | Project Scientist
  Advisor: Prof. Uday Khankhoje *Sep. 2018 - July 2019*
  - Developed a deep learning based framework to solve the electromagnetic inverse scattering problem, building up on the existing iterative solutions and aimed at addressing the issue of imaging strong scatterers.

- Formulated a multi-frequency scheme for the inverse scattering problem for dispersive scatterers. The formulated scheme and conventional multi-frequency methods are compared with the deep-learning scheme for imaging strong scatterers.

- **Wavelets in Inverse Scattering** | Master's Thesis
  Advisor: Prof. Vikram .M. Gadre *May 2017 - May 2018*
  - Formulated iteratively reweighted variation of the joint ℓ_1-ℓ_2 regularization Born iterative method to obtain improved dielectric profile reconstructions.
  - Developed a non-linear constrained optimization framework to solve inverse scattering problem. The local minima encountered are circumvented by a penalty function based approach to imposing physical constraints.

- **Texas Instruments, Bangalore** | Summer Intern
  Time-of-Flight Camera Team *May 2016 – July 2016*
  - Developed novel metrology system to extract dimensions of objects from ToF images using classical computer vision based methods. The metrology system was integrated into *Voxel Viewer*, the in-house software for depth image visualization and camera-to-PC interface.
  - Formulated a novel calibration procedure for low resolution depth camera (60×80 and 240×320) which simultaneously estimated the camera parameters (optical center and focal length) and per-pixel phase offset.

- **Design Engineer** | IIT Bombay Racing
  Battery Management Subsystem *Mar. 2015 – Apr. 2016*
  - Designed and assembled 389V battery from lithium ion cells, along with auxiliary management system for voltage & temperature monitoring of cells
  - Designed an integrated PCB responsible for interfacing battery and motor controllers which included several smaller components such as pre-charge discharge circuits, energy monitoring

Teaching

- **Introduction to Machine Learning** | Teaching Assistant
  Instructor: Prof. Amit Sethi *Jan. 2018 - Apr. 2018*
- **Network Theory** | Teaching Assistant
  Instructor: Prof. V.M. Gadre *June 2017 - Nov. 2017*
- **Fundamentals of Wavelets** | Teaching Assistant
  Instructor: Prof. V.M. Gadre *Jan. 2017 – Apr. 2017*

Standardized Test Scores

- **GRE**: **333/340** (Reading: **163/170**, Quantitative: **170/170**, AWA: **4/6**)
- **TOEFL**: **114/120** (Reading: **29/30**, Listening: **30/30**, Speaking: **26/30**, Writing: **29/30**)