

# Lalit Manam

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C-235, Computer Vision Lab, Electrical Engineering, Indian Institute of Science, Bengaluru, Karnataka, INDIA - 560012

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## Research Interests

3D Computer Vision, Structure-from-Motion, Volumetric Rendering Methods  
Simultaneous Localization and Mapping, Graph Representations, Image Processing

## Education

**Ph.D.(Engg.) & M.Tech.(Res.)** - Electrical Engineering [GPA: 9.1/10] 2018–2025

Indian Institute of Science (IISc) Bengaluru

Prime Ministers Research Fellow (PMRF)

Advisor: Prof. Venu Madhav Govindu

Thesis: Global Methods for Camera Motion Estimation

**B.Tech.** - Electronics and Communication Engineering (ECE) [GPA: 9.41/10] 2013–2017

Silver Medalist (ECE Branch Topper)

National Institute of Technology (NIT) Silchar

## Experience

### Teaching Assistant

- Indian Institute of Science Bengaluru

• Course: Computer Vision (E1-216) Spring 2021–2024

Instructor: Prof. Venu Madhav Govindu

• Course: Stochastic Models and Applications (E1-222) Fall 2020

Instructor: Prof. P S Sastry

- NPTEL Online Courses

• Course: Computer Vision and Image Processing (NOC23-EE39) Spring 2023

Instructor: Prof. M K Bhuyan, IIT Guwahati

• Course: Computer Vision (NOC22-CS89) Fall 2022

Instructor: Prof. Jayanta Mukhopadhyay, IIT Kharagpur

### Software Developer

- AMDOCS Development Center India LLP Jul 2017–Jul 2018

## Projects

- Graph sparsification and disambiguation in structure-from-motion Aug 2023–present

• Developing methods to prune input graphs for faster and accurate 3D reconstructions

- Motion averaging in 3D reconstruction problems Aug 2019–present

• Developing methods for camera motion estimation in structure-from-motion

- Restoration of images corrupted by various noises using fuzzy based approaches Jul 2016–May 2017

• Developed different methods for removal of impulse noise from colour images

- K-Map Windows app Mar 2015

• Developed an application to solve 4 variable K-Map in Sum-of-Product (SOP) form [[Video](#)]

## Research Papers

- **L Manam**, V M Govindu, “Unifying viewgraph sparsification and disambiguation of repeated structures in structure-from-motion,” under review

- **L Manam**, V M Govindu, “Sensitivity analysis in translation averaging,” under review

- **L Manam**, V M Govindu, “Leveraging camera triplets for efficient and accurate structure-from-motion,” Conference on Computer Vision and Pattern Recognition (CVPR), pp. 4959–4968, 2024 [[Project Page](#)]

- **L Manam**, V M Govindu, “Fusing displacements and directions in translation averaging,” International Conference on 3D Vision (3DV), pp. 75–84, 2024 (oral presentation) [[Project Page](#)]

- **L Manam**, V M Govindu, “Sensitivity in translation averaging,” Neural Information Processing Systems (NeurIPS), vol. 36, pp. 62740–62763, 2023 [[Project Page](#)]

- C Sidhartha, **L Manam**, V M Govindu, “Adaptive annealing for robust geometric estimation,” Conference on Computer Vision and Pattern Recognition (CVPR), pp. 21929–21939, 2023 [[Project Page](#)]

- **L Manam**, V M Govindu, “Correspondence reweighted translation averaging,” European Conference on Computer Vision (ECCV), pp. 56-72, 2022 [[Project Page](#)]
- A Roy, **L Manam**, R H Laskar, “Removal of ‘Salt & Pepper’ noise from color images using adaptive fuzzy technique based on histogram estimation,” Multimedia Tools and Applications, vol. 79, no. 47, pp. 34851-34873, Dec. 2020
- A Roy, **L Manam** and R H Laskar, “Region adaptive fuzzy filter: an approach for removal of random valued impulse noise,” IEEE Transactions on Industrial Electronics, vol. 65, no. 9, pp. 7268-7278, Sept. 2018
- **L Manam**, A Roy, R H Laskar and F A Talukdar, “Removal of fixed valued impulse noise using global noise statistics based adaptive histogram fuzzy filter,” TENCON 2017 - IEEE Region 10 Conference, pp. 2231-2235, 2017
- A Roy, J Singha, **L Manam**, R H Laskar, “Combination of adaptive vector median filter and weighted mean filter for removal of high density impulse noise from color images,” IET Image Processing, vol. 11, no. 6, pp. 352-361, Jan. 2017

### Honours and Awards

- Received Kotak-IISc AL-ML Travel Grant for attending CVPR 2024 (June 2024)
- Received Pratiksha Trust Travel Fellowship for attending 3DV 2024 (Mar 2024)
- Received Google Travel Grant and NeurIPS 2023 Scholar Award for attending NeurIPS 2023 (Dec 2023)
- Granted Prime Ministers Research Fellowship (from Govt. of India) for the duration of Ph.D. (Aug 2018) (among 6.98% of interviewed candidates)
- Received Academic Excellence Award and Silver Medal at NIT Silchar for scoring highest GPA (May 2017)
- Awarded Best Volunteer 2015 in Administration at Children of Hope India (Silchar based NGO) (Feb 2016)
- Invited for Dewang Mehta felicitation of engineering students at Kaziranga University Jorhat (Aug 2015)
- Received Academic Excellence Award and a Silver Medal at Delhi Public School Dhanbad (July 2013)

### Skills & Technologies

- C, C++, Python
- $\text{\LaTeX}$ , MATLAB

### Relevant Courses at IISc

- Computer Vision
- Matrix Theory
- Stochastic Models and Applications
- Linear and Non-linear Optimization
- Convex Optimization
- Machine Learning

### Extra Curriculars

- Represented [Computer Vision Lab](#) at EE Summer School 2022 and 2023 held at EE, IISc
- Represented [Computer Vision Lab](#) at Open Day 2019, 2020 and 2024 held at IISc
- Volunteer in Administration at Children of Hope India (Mar 2015–Apr 2016)
- Conducted C Programming classes under Robotics Club, NIT Silchar (Aug–Nov 2014)
- Organized events under ECS Society and Robotics Club, NIT Silchar
- Participated in NITS-MUN in Sept 2014