Nagabhushan S N

Contact Information

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Research Interests

- 3D Computer Vision
- Image and Video Signal Processing
- Machine Learning

Education

Ph.D. - Indian Institute of Science (IISc), Bengaluru   Aug 2018 - May 2024
Dept of Electrical Communication Engineering
- Advisor   : Dr. Rajiv Soundararajan
- Thesis Reviewers   : Dr. Aniket Bera (Purdue University), Dr. Kaushik Mitra (IIT-Madras)
- CGPA   : 9.59
- Recipient of Prime Minister's Research Fellowship (PMRF)

B.E. - PES Institute of Technology, Bengaluru   Aug 2012 - May 2016
Dept of Electronics and Communication Engineering
- Project Advisors   : Dr. Vamsi Krishna, Dr. Sanjeev Gurugopinath
- CGPA   : 9.93 (Gold Medallist)
- GATE Score   : 810 (AIR 233)

P.U.C. - Govt [Ex-MPL] College, Ballari   Jun 2010 - May 2012
- Specialization   : Science (PCME)
- Class XII Score   : 96% (District Topper)
- K-CET Rank   : 207

School - Bala Bharathi, Ballari   Jun 1998 - Mar 2010
- Class X Score   : 96.8% (District Topper)

Course Work

Mathematics	: Linear Algebra, Probability and Random Process, Linear and Non-Linear Optimization
Electrical	: Computer Vision, Digital Image Processing, Digital Video: Perception and Algorithms, Machine Learning for Signal Processing, Detection and Estimation Theory

Certifications

- **Algorithmic Toolbox** by University of California San Diego on Coursera in Oct 2016.

Computer Skills

Programming Languages	: Python, Java, Android, MATLAB
Platforms	: Windows, LINUX, MacOS
Softwares	: LaTeX

Industrial Experience

SpreeAI Corporation   May 2024 - Present
- ⬦ Role   : Research Scientist
- ⬦ Team   : Long Term Research
- ⬦ Working on learning effective 3D representations for virtual try-on of garments.

Cisco Systems India Pvt Ltd   Aug 2016 - Jul 2018
- ⬦ Role   : Software Engineer
- ⬦ Team   : Software Integration and Orchestration (Advanced Services)
- ⬦ Developed modules on top of Cisco Network Service Orchestrator (NSO) to automate configuring customer's network devices.
- ⬦ Developed an automation tool to generate Java POJO classes based on network architecture defined in yang files.

Elseem Inc.   Jun 2015 - Jul 2015
- ⬦ Role   : Intern
- ⬦ Team   : Research and Development
- ⬦ Vehicle Tracking System: Developed software for Particle device to interface with GPS module and update location to firebase server. Also developed an android app for the users to track their vehicle using their smartphone.

Academic Experience

PES University (PESU)   Jan 2021 - May 2023
- ⬦ Visiting Faculty.
- ⬦ Mathematics for Machine Learning - Jan 2022 semester, Jan 2023 semester.
- ⬦ Matrix Theory - Jan 2021 semester.

Indian Institute of Science (IISc)   Oct 2020 - May 2022
- ⬦ Teaching Assistant.
- ⬦ Courses: Matrix Theory, Digital Image Processing.

Publications

- ⬦ <u>Conferences:</u>
  - ➢ Nagabhushan Somraj, Kapil Choudhary, Sai Harsha Mupparaju, and Rajiv Soundararajan. Factorized motion fields for fast sparse input dynamic view synthesis. In *Proceedings of the ACM Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH)*, 2024.
  - ➢ Nagabhushan Somraj, Adithyan Karanayil, and Rajiv Soundararajan. SimpleNeRF: Regularizing sparse input neural radiance fields with simpler solutions. In *ACM SIGGRAPH Asia*, December 2023.
  - ➢ Nagabhushan Somraj and Rajiv Soundararajan. ViP-NeRF: Visibility prior for sparse input neural radiance fields. In *ACM Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH)*, 2023.
  - ➢ Nagabhushan Somraj, Pranali Sancheti, and Rajiv Soundararajan. Temporal view synthesis of dynamic scenes through 3d object motion estimation with multi-plane images. In *IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*, 2022.

➤ Vijayalakshmi Kanchana, Nagabhushan Somraj, Suraj Yadwad, and Rajiv Soundararajan. Revealing disocclusions in temporal view synthesis through infilling vector prediction. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2022.

◇ <u>Journals</u>:

➤ Nagabhushan Somraj, Sai Harsha Mupparaju, Adithyan Karanayil, and Rajiv Soundararajan. Simple-RF: Regularizing sparse input radiance fields with simpler solutions. *Under review at TOG*.

➤ Nagabhushan Somraj, Manoj Surya Kashi, S. P. Arun, and Rajiv Soundararajan. Understanding the perceived quality of video predictions. *Signal Processing: Image Communication (SPIC)*, 102:116626, 2022.

Peer Reviews

◇ IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR): 2024

◇ IEEE International Conference on Computer Vision (ICCV): 2023

◇ European Conference on Computer Vision (ECCV): 2024 (**Outstanding Reviewer**)

◇ IEEE Winter Conference on Applications of Computer Vision (WACV): 2025, 2024 (**Outstanding Reviewer**), 2023

◇ AAAI Conference on Artificial Intelligence: 2025

◇ British Machine Vision Conference (BMVC): 2024, 2023, 2022

◇ Asian Conference on Computer Vision (ACCV): 2024

◇ Pacific Graphics: 2024

◇ IEEE International Symposium on Mixed and Augmented Reality (ISMAR): 2024, 2023, 2022 (**Highly useful review**)

◇ IEEE Virtual Reality (VR): 2024, 2023

◇ IEEE Transactions on Circuit Systems and Video Technologies (TCSVT): 2024

◇ IEEE Transactions on Computational Imaging (TCI): 2024

◇ Journal of Electronic Imaging (JEI): 2022, 2021, 2020

◇ International Conference on Signal Processing and Communications (SPCOM): 2024

◇ IEEE Global Communications Conference (GLOBECOM): 2024

Invited Talks

◇ Sparse Input View Synthesis with Neural Radiance Fields (NeRF)

➤ EECS Symposium 2024 (Best Presentation Award).

◇ NeRF: Neural Radiance Fields

➤ At Qualcomm India Pvt Ltd, Feb 2023.
➤ Guest Lecture for the course, Deep Learning for Computer Vision, 2022.

◇ Temporal View Synthesis of Dynamic Scenes

➤ Student Research Seminar Series, IISc, Feb 2022.

◇ Naturalness Assessment for Video Prediction

➤ Network Seminar Series, IISc, Oct 2020.

◇ Generative Adversarial Networks (GANs) and their Applications

➤ PES University, Jan 2020.

Projects

Face Detection using Aggregate Channel Features 2019
- ⋄ Digital Image Processing course project.
- ⋄ Implemented in Python.
- ⋄ Based on paper:

Intra-Campus Wi-Fi Calling System 2016
- ⋄ B.E. Final Year Project.
- ⋄ Developed a system to make voice calls and transmit messages within a campus using Wi-Fi and without internet. Designed a simple protocol to handle messaging and calls. TCP is used to transmit packets. Applied Voice Activity Detection to suppress non-voice packets thereby reducing delay. Also developed a server to connect calls and an android app for client-side.

Android Apps 2014–17
- ⋄ Finance Manager: Helps managing the finances of individuals, with added features such as statistics, automatic entry of transactions from back messages, export to PDF and backup/restore. This is developed in Java using Android Studio.
- ⋄ One Touch Settings: Adds a button panel in notification drawer to control frequently used settings.
- ⋄ Google Play Developer Profile: Link.

Honors & Awards

- ⋄ Recipient of Best Presentation Award at EECS Symposium 2024.

- ⋄ Recipient of Prime Minister's Research Fellowship (PMRF), 2020.

- ⋄ Recipient of 'You Amaze One' award in Cisco as recognition from Raghuveer Krishna, Manager.

- ⋄ Recipient of MHRD scholarship (Govt of India) for all 4 years of B.E.

- ⋄ Recipient of MRD scholarship (awarded from the 5th sem onwards), in every semester till B.E. graduation.

- ⋄ 1st Place in Circuithon competition conducted by IEEE PES University Student Branch.

- ⋄ 2nd Prize in Technical Writing Competition organized as a part of LitFest 2014 in PESIT.

- ⋄ Volunteered and coordinated the Science Exhibition 'Prakalpa' held in PESIT (2014).