Nagabhushan S N

Contact Information

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Research Interests

- ⋄ Image and Video Signal Processing
- ⋄ Deep Video Prediction: Applications and Evaluation
- ⋄ Computer Vision
- ⋄ Machine Learning

Education

Ph.D. - Indian Institute of Science (IISc), Bengaluru　　　　　　　　Aug 2018 - Present
Dept of Electrical Communication Engineering
- ⋄ Advisor　　　　　　　: Dr. Rajiv Soundararajan
- ⋄ CGPA　　　　　　　　: 9.59

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	: Digital Image Processing, Digital Video: Perception and Algorithms, Computer Vision, 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	: Java, Python, Android, MATLAB
Platforms	: Windows, LINUX, MacOS
Softwares	: LaTeX

Industrial Experience

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 2022
- ◇ Visiting Faculty.
- ◇ Mathematics for Machine Learning - Jan 2022 semester, Jan 2023 semester.
- ◇ Matrix Theory - Jan 2021 semester.

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

Projects

Face Detection using Aggregate Channel Features   2019
- ◇ Digital Image Processing course project.
- ◇ Implemented in Python.
- ◇ Based on paper: Bin Yang, Junjie Yan, Zhen Lei, and Stan Z Li. Aggregate channel features for multi-view face detection. In *IEEE International Joint Conference on Biometrics*, 2014

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 is notification drawer to control frequently used settings.
- ◇ Google Play Developer Profile: Link.

Honors & Awards

◇ 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).

Publications

◇ <u>Journals</u>:

➢ 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.

◇ <u>Conferences</u>:

➢ Nagabhushan Somraj, Pranali Sancheti, and Rajiv Soundararajan. Temporal view synthesis of dynamic scenes through 3d object motion estimation with multi-plane images. *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.

Peer Reviews

◇ <u>2023</u>:

➢ Winter Conference on Applications of Computer Vision (WACV): 2
➢ IEEE VR: 1
➢ National Conference on Communications (NCC): 1
➢ DSP: 1

◇ <u>2022</u>:

➢ British Machine Vision Conference (BMVC): 6
➢ International Symposium on Mixed and Augmented Reality (ISMAR), journal track: 1
➢ Journal of Electronic Imaging (JEI): 4

◇ <u>2021</u>:

➢ Journal of Electronic Imaging (JEI): 1

◇ <u>2020</u>:

➢ Journal of Electronic Imaging (JEI): 1

Invited Talks

- ◇ NeRF: Neural Radiance Fields
  - ➢ Guest Lecture for the course, Deep Learning for Computer Vision, 2022.
  - ➢ At Qualcomm India Pvt Ltd, Feb 2023.

- ◇ 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.