Nithin Gopalakrishnan Nair

E-mail: ngopala2@jhu.edu *Telephone number:* +1-667-212-9785
Address: 3501 Saint Paul Street, Apt 935, Baltimore, MD, USA
Social Networks:

Research Interests

I work on problems in Computer Vision. My research areas include deep generative modelling with a special emphasis on plug and play models and efficient architectures for generation, enabling training and inference of generative models on low-compute resources.

Education

Ph.D candidate in Electrical and Computer Engineering *Johns Hopkins University*
Advisor: Dr Vishal Patel *January 2021 - Present*
CGPA: 3.96/4.0
Research focused on deep generative modelling, low compute networks and low-level vision

Bachelors in Electrical Engineering *Indian Institute of technology, Madras*
B.Tech and M.tech dual degree program *July 2015 - July 2020*
CGPA: 9.0/10.0
M.Tech Thesis: Unconstrained dual-lens deblurring using deep networks

Publications

Highlights: 7 first-authored accepted papers, 2 first-authored accepted paper in CVPR '23, ICCV '23

Nithin Gopalakrishnan Nair, Anoop Cherian, Suhas Lohit, Toshi Akino, Ye Wang, Vishal M Patel, Tim Marks, Steered Diffusion: A Generalized Framework for Plug-and-Play Conditional Face Synthesis, *Proceedings of the IEEE/CVF international conference on computer vision*, 2023

Nithin Gopalakrishnan Nair, Wele Gedara Chaminda Bandara, Vishal Patel, Unite and Conquer: Cross Dataset Multimodal Synthesis using Diffusion Models, *Proceedings of the IEEE conference on computer vision and pattern recognition*, 2023

Nithin Gopalakrishnan Nair, Kangfu Mei, Vishal Patel, AT-DDPM: Restoring Faces degraded by Atmospheric Turbulence using Denoising Diffusion Probabilistic Models, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2023

Nithin Gopalakrishnan Nair, Vishal Patel, T2V-DDPM: Thermal to Visible Face Translation using Denoising Diffusion Probabilistic Models, *IEEE International Conference on Automatic Face & Gesture Recognition*, 2023

Nithin Gopalakrishnan Nair, Kangfu Mei, Vishal Patel, A comparison of different atmospheric turbulence simulation methods for image restoration, *IEEE International Conference on Image Processing (ICIP)*, 2022

Malsha Perera, **Nithin Gopalakrishnan Nair**, Wele Gedara Chaminda Bandara, Vishal Patel, SAR Despeckling using a Denoising Diffusion Probabilistic Model, *IEEE Geoscience and Remote Sensing Letters*,2023

Nithin Gopalakrishnan Nair, Rajeev Yasarla, Vishal Patel, NBD-GAP: Non-Blind Image Deblurring Without Clean Target Images, *IEEE International Conference on Image Processing (ICIP)*, 2022

Nithin Gopalakrishnan Nair, Rajeev Yasarla Vishal Patel, Confidence Guided Network For Atmospheric Turbulence Mitigation, *IEEE International Conference on Image Processing (ICIP)*, 2021

Mahesh Mohan MR, **Nithin Gopalakrishnan Nair**, AN Rajagopalan, Deep Dynamic Scene Deblurring for Unconstrained Dual-Lens Cameras, *IEEE Transacations in Image Processing (TIP)* 2021

Nithin Gopalakrishnan Nair, Kangfu Mei, Vishal Patel, Bi-Noising Diffusion: Towards Conditional Diffusion Models with Generative Restoration Priors, *Under review 2023*

Wele Gedara Chaminda Bandara, **Nithin Gopalakrishnan Nair**, Vishal Patel, Diffuse-Denoise-Count: Accurate Crowd-Counting with Diffusion Models, *Under review 2023*

Yasiru Ranasinghe, **Nithin Gopalakrishnan Nair**, Wele Gedara Chaminda Bandara, Vishal M Patel, DDPM-CD: Remote Sensing Change Detection using Denoising Diffusion Probabilistic Models, *Under review 2023*

Jay N Paranjape, **Nithin Gopalakrishnan Nair**, Shameema Sikder, S Swaroop Vedula, Vishal M Patel, Adaptivesam: Towards efficient tuning of sam for surgical scene segmentation, *Under review 2023*

Professional Experience

Adobe Inc.	May 2022 - August 2023
Mistubishi Electric Research Labs	May 2022 - August 2023
Indian Space Research Organization	November 2016 - January 2016
VIU Lab, JHU	Sept 2022 - Present
IPCV Lab, IIT Madras	May 2019- August 2020

Portfolio of most relevant projects

Adobe Firefly *May 2023 - Present*
Adobe's Image generation model *Seattle, USA*

- Devloping an Interactive Image Editing Algorithm

BRIAR *August 2021 - Present*
IARPA's face recognition program *Baltimore, USA*

- Developing a robust large-scale face recognition framework as part of the BRIAR program.

LIGO data analysis *January2019- May 2019*
UC Berkeley *Chennai, India*

- Worked on the Signal Processing side of analyzing data capture for the LIGO project

EMISAT *May 2017- July 2017*
India's signal detection Satellite *Bangalore, India*

- Developed a signal analyzer for undersampled signal detection for EMISAT

Awards and Scholastic Achievements

- All India Rank 454 in Joint Engineering Entrance (Advanced) 2015 from 1.5 million candidates.
- State rank 4 in KEAM 2015 from over 200,000 candidates.

- Awarded certificate for being among the top 0.1% in AISSCE 2015 by Central Board of Secondary Education, India.
- Awarded Kishore Vaigyanik Protsahan Yojana Scholarship 2014, by the Government of India, given to top 1000 from 300,000 candidates to pursure study in Sciences.
- All India Topper in NPTEL Analog Electronic Systems, 2018.

Technical skills

Programming Languages/Tools	C, C++, Python, SQL, Verilog, VHDL
Academic	Computer Vision, Deep Learning, Machine Learning, Digital Electronics, Analog Electronics

Services

National Service Scheme 2015	Worked on Enriching Malayalam Wikipedia
National Service Scheme 2016	Worked on Suyam Project, aimed at preliminary education for students in rural villages in India
Invited Reviewer: ICCV 23'	The International Conference on Computer Vision (ICCV)
Invited Reviewer: CVPR 23'	IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR)
Invited Reviewer: WACV 24'	IEEE/CVF Winter Conference on Applications of Computer Vision (CVPR)
Invited Reviewer: PAMI	IEEE Transactions on Pattern Analysis and Machine Intelligence(TPAMI)