



# Nithin Gopalakrishnan Nair

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CONTACT INFORMATION      3501 Saint Paul St      E-mail: [ngopala2@jhu.edu](mailto:ngopala2@jhu.edu)  
Apt. 935      Webpage: <https://nithin-gk.github.io/>  
Baltimore, MD, USA      On networks:   

RESEARCH INTERESTS      Deep Learning, Computer Vision, Image Restoration

RESEARCH STATEMENT      I work on problems in computer vision, more specifically on Image restoration, My research primarily focuses on Image restoration and deep generative modelling. Specifically I use generative models for multiple downstream tasks including Image synthesis, Image editing, Image translation as well as Image restoration

EDUCATION      **Johns Hopkins University**      Maryland, USA  
*Ph.D candidate in Electrical and Computer Engineering*      2021-Present

- Key courses: *Machine Intelligence, Vision as Bayesian Inference, Probabilistic Machine Learning, Compressed Sensing*
- Ph.D advisor: [Dr. Vishal M Patel](#)

**Indian Institute of Technology Madras**      Chennai, India  
*B.Tech & M.Tech in Electrical Engineering*      2015-2020

- Key courses: *Deep Learning, Machine Learning, Probability, Statistics and Stochastic Processes, Linear Algebra for Engineers, Probabilistic Graphical Models*
- Dual degree Thesis: ‘Uncontstrained Dynamic Scene Deblurring for Dual lens Cameras’
- Dual Degree project advisor: [Prof. A.N. Rajagopalan](#)

PUBLICATIONS      **Nithin Gopalakrishnan Nair**, Wele Gedara Chaminda Bandara, Vishal Patel, Unite and Conquer: Cross Dataset Multimodal Synthesis using Diffusion Models, Arxiv, 2023

**Nithin Gopalakrishnan Nair**, Kangfu Mei, Vishal Patel, Bi-Noising Diffusion: Towards Conditional Diffusion Models with Generative Restoration Priors, Under review 2022

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

**Nithin Gopalakrishnan Nair**, Kangfu Mei, Vishal Patel, AT-DDPM: Restoring Faces degraded by Atmospheric Turbulence using Denoising Diffusion Probabilistic

Models, IEEE WACV 2023

**Nithin Gopalakrishnan Nair**, Vishal Patel, T2V-DDPM: Thermal to Visible Face Translation using Denoising Diffusion Probabilistic Models, IEEE FG 2023

**Nithin Gopalakrishnan Nair**, Kangfu Mei, Vishal Patel, A comparison of different atmospheric turbulence simulation methods for image restoration, ICIP 2022

**Nithin Gopalakrishnan Nair**, Rajeev Yasarla, Vishal Patel, NBD-GAP: Non-Blind Image Deblurring Without Clean Target Images, ICIP 2022

**Nithin Gopalakrishnan Nair**, Rajeev Yasarla Vishal Patel, Confidence Guided Network For Atmospheric Turbulence Mitigation, ICIP 2021

Mahesh Mohan MR, **Nithin Gopalakrishnan Nair**, AN Rajagopalan, Deep Dynamic Scene Deblurring for Unconstrained Dual-Lens Cameras, TIP 2021

## EXPERIENCE

**Vision and Image Understanding Lab**, Johns Hopkins University

*Graduate Research Assistant*

Sept 2020-Present

Research in the department of Electrical and Computer Engineering on Supervised and Semi-supervised Image restoration techniques, advised by Dr. Vishal Patel.

**Image Processing and Computer Vision Lab**, IIT Madras

*Graduate Research Assistant*

May 2019-August 2020

Research in the department of Electrical Engineering on Image restoration techniques focusing on dual lens cameras, advised by Dr. AN Rajagopalan.

## AWARDS AND SCHOLASTIC ACHIEVEMENTS

- All India Rank 454 in Joint Engineering Entrance (Advanced) 2015 from over 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 pursue study in Sciences.

## SOFTWARE SKILLS

**Languages:**

Python, C++, L<sup>A</sup>T<sub>E</sub>X

**Libraries:**

PyTorch, TensorFlow, NumPy, OpenCV, Scikit-learn

**Applications and tools:** Git, MATLAB

## CO-CURRICULAR ACTIVITIES

**Social Initiatives**

- Volunteered for a project aimed at increasing content in vernacular languages in Wikipedia. Contributed around 10 articles for the same. (Sept 2015 - April 2016)
- Led a team of 17 students for providing education to under-privileged children in high school. (Sept 2016 - April 2017)
- Part of the managerial team of National Service Scheme, India, which oversaw 10 student-run projects. Mentored two projects personally as a member of the “Projects” team. (Aug 2017 - Jan 2018)