Nithin C Babu

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Research Interests

- Image and Video Processing
- Visual Quality Assessment
- Deep Learning

Education

- **Indian Institute of Science, Bangalore** — Bangalore, Karnataka
  Ph. D. in Electrical Communication Engineering — *October 2020 - Present*
  - Research Advisor : Dr. Rajiv Soundararajan
  - Research Topic : Visual Quality Assessment of User-Generated and AI-Generated Content
  - CGPA : 9.0/10
- **Government Engineering College, Thrissur** — Thrissur, Kerala
  Bachelor of Technology in Electronics and Communication Engineering — *Aug 2015 - July 2019*
  - Project Advisor : Prof. Anish Babu K K
  - CGPA : 8.03/10
- **Kendriya Vidyalaya Thrissur** — Thrissur, Kerala
  CBSE Senior Secondary Examination — *2015*
  - Steam : Computer Science
  - Percentage : 94.4%
- **Kendriya Vidyalaya Thrissur** — Thrissur, Kerala
  CBSE Secondary Examination; CGPA: 10/10 — *2013*
  - CGPA : 10/10

Research Publications

- **Conference**:
  - Nithin C. Babu, Vignesh Kannan, and Rajiv Soundararajan. No reference opinion unaware quality assessment of authentically distorted images. In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, pages 2459–2468, January 2023 (paper) (project page) (video) (poster)
- **Journal**:
  - Vignesh Kannan, Sameer Malik, Nithin C. Babu, and Rajiv Soundararajan. Quality assessment of low-light restored images: A subjective study and an unsupervised model. *IEEE Access*, 11:68216–68230, July 2023 (paper) (project page)

Course Work

- **Mathematics**: Random Process, Matrix Theory, Linear and Non-Linear Optimization
- **Signal Processing**: Detection and Estimation Theory, Digital Image Processing, Advanced Image Processing, Computer Vision, Pattern Recognition and Neural Networks, Adaptive Signal Processing

Skills Summary

- **Programming**: Python, MATLAB, C++
- **Platforms**: Windows, Linux
- **Softwares**: LaTeX

Internships and Training

- **Elvicto Technologies Private Limited, Technopark, Trivandrum** Trivandrum, Kerala
  Project Intern *July 2018*
  - **Smart Sensor Design based on LoRaWAN Technology**: Project Intern for one month in designing and developing Smart Sensors based on IoT and LoRaWAN Technologies for Smart City developments.
- **National Institute of Electronics and Information Technology, Calicut** Calicut, Kerala
  Intern *June 2017 - July 2017*
  - **Embedded System Design using Raspberry Pi Internship**: Completed a one-week internship in Embedded System Design and IoT on Raspberry Pi.
- **Bharat Sanchar Nigam Limited, Thrissur** Thrissur, Kerala
  Industrial Trainee *June 2016 - July 2016*
  - **Telecom Technology Industrial Training**: Completed a two-week industrial training on 'Telecom Technology'.

Academic Experience

- **Indian Institute of Science**:
  - **Main teaching assistant**: E9 241 - Digital Image Processing *August 2022 - December 2022*
    - Involved in setting up and evaluating assignments.
    - Conducted tutorials on Python / MATLAB coding.
  - **Main teaching assistant**: E9 241 - Digital Image Processing *August 2023 - December 2023*
    - Involved in setting up and evaluating assignments.
    - Conducted a special Python / MATLAB vectorization and broadcasting tutorial.

Academic Projects

- **Adversarial attacks on Perceptual Quality Metrics trained on Authentically Distorted Images and Defense strategies**: *June 2021*
  - ***Advanced Image Processing Course Project***: Analyzed the effect of adversarial attacks on deep-feature based perceptual quality metrics and employed adversarial training to improve performance the of deep-features.
- **Learning to See in the Dark**: *January 2021*
  - ***Digital Image Processing Course Project***: Analysis of the paper, 'Learning to See in the Dark' by *Chen et al.* (CVPR 2018). Used the implementation to learn the basics of deep learning and its implementation in Python using Tensorflow. Analyzed the trained network and solved a limitation of the existing paper.
- **Automated Locker Management System for Laundry Services**: *2018 - 19*
  - ***B.Tech. final year Project***: Created a fully automated, scalable locker system for Black Swan Dry Cleaners company. Here, the customer can drop off his/her garments in the locker and pick them up when finished, being notified by an SMS to his/her mobile phone.

Honors and Awards

- Recipient of Prime Minister Scholarship Scheme 2015-'19 for all four years of B.Tech.
- 0.1% Merit in Mathematics in CBSE Senior Secondary Examination

Test Scores

- Graduate Aptitude Test in Engineering (GATE) 2020 - Score 933/100 (AIR 12 in ECE)

Peer Reviews

- **2024**:
  - Computer Vision and Pattern Recognition (CVPR) : 3