



NITIN NILESH

Bengaluru, India | +91 - 8981677732 | nitinnilesh49@gmail.com | [LinkedIn](#) | [GitHub](#) | [Website](#) | [Google Scholar](#)

Generative AI ENGINEER | DEEP LEARNING ENGINEER | APPLIED SCIENTIST | CAMERA R&D ENGINEER

Proactive and dedicated professional with over **4 years of expertise** and a strong foundation in research and practical methodology application, seeking a dynamic role in an organization to apply **deep learning, machine learning, Image Signal Processor development, computer vision, LLM, IoT, and perceptual image quality enhancement** skills to drive innovation and project success.

- Winner (Developing an image-based Air Quality Index (AQI) Estimation Technique) - [Environmental Sensing Project Competition \(2022\)](#) | MegaSense Team - University of Helsinki | [Reviews by ESPC Committee](#)
- Amazon Internship: Applied Scientist | Graph Neural Networks | Customer Fraud Issues
- Conducted [CV-based analysis on Premier Badminton League \(PBL-2019\) live games](#) broadcasted by Star Sports India.
- 98.39% in GATE (Entrance Exam for Masters and PhD) | 2017

CORE COMPETENCIES

Deep Learning | PyTorch | Machine Learning | Generative AI Model Deployment | Image Signal Processor (ISP) Development | Computer Vision | Internet of Things | Perceptual Image Quality Enhancement | ISP Models | Graph-Based Convolution Networks (GCN, GAT) | Fraud Detection | Attention Mechanism Modeling | Proof-of-Concept Development | Project Delivery

PROFESSIONAL SUMMARY

- Dedicated professional with **specialized experience in developing & optimizing Spectra Image Signal Processor (ISP) pipelines**.
- Proficient in **consistently enhancing perceptual image quality** through precise bayer domain filtering, noise reduction, sharpening, and tone mapping techniques.
- Demonstrates expert-level competence in **building and fine-tuning differentiable Image Signal Processor models using reverse mode autograd**.
- Possesses a **strong foundation in graph-based convolution networks (GCN, GAT)**; deft at effectively **detecting fraud and modeling attention mechanisms on heterogeneous graphs**.
- Track record in **curating, designing, and delivering tutorials, labs, and lectures on machine learning & deep learning topics**.
- Contributed significantly to the **development of innovative proof-of-concepts for machine learning capabilities**, in addition to **excelling in mobile application development using the Dot-Net framework**.
- Versatile with a diverse range of technical skills and a **robust background in AI, machine learning, and image processing**.
- History of **successfully delivering projects & achieving objectives in the field of image processing and machine learning**.
- **Collaborative team player** known for **effectively communicating complex technical concepts** and fostering a culture of knowledge sharing and innovation within the organization.

TECHNICAL SKILLS

Languages: Python, LATEX

Machine Learning: Scikit-Learn, Pandas, NumPy, Matplotlib

Deep Learning: PyTorch, TensorFlow, OpenCV, Deep Graph Library

Others: Raspberry Pi, Git/GitHub

WORK EXPERIENCE

☆ [Generative AI Lead Engineer](#) - Harman Connected Services, Bengaluru

Feb 2024 - Present

- Working in the area of **Generative AI** for the IQVIA team to **develop solutions related to their healthcare devices**.

☆ [Camera R&D Engineer](#) - Qualcomm Research, Bengaluru

Sep 2021 - Nov 2023

- Took charge of **implementing the new camera pipeline and successfully completed all proof of concepts** in a project with limited allocated resources for planning a new camera architecture, thereby accomplishing the establishment of a solid foundation for subsequent teams to build upon.
- **Identified weaknesses and drove substantial improvements in a suboptimal project with issues related to task delivery and utilization**, thereby making the platform widely utilized by teams across the globe for significant task fulfilment.
- Engineered Qualcomm's Spectra Image Signal Processor (ISP) pipelines for diverse input images and videos, encompassing the complete pipeline design from raw captures to achieving superior perceptual image quality.
- Implemented critical processing steps, including Bayer domain filtering, noise reduction, sharpening, tone mapping, and more on the images and videos.
- Pioneered the development of a differentiable Image Signal Processor model to fine-tune image processing algorithm parameters using the reverse mode autograd mechanism

☆ **Applied Scientist Intern** - Amazon India Machine Learning, Bengaluru

Aug 2020 - Jan 2021

- Employed graph-based convolution networks (GCN, GAT) to identify fraudulent customers and orders effectively.
- Designed and implemented an attention mechanism on a heterogeneous (k-partite) graph, considering various edge types to perform node classification for both customers and orders.

☆ **AI/ML Course Mentor** - TalentSprint, Hyderabad

Sep 2018 - Dec 2021

- Initiated leaving the previous approach of merely offering assistance with practical assessments, enabling the team to broaden its scope to include the delivery of comprehensive lectures on essential topics. As a result, **attained a significant increase in enrolment for future AI/ML course batches, with these participants successfully completing the course.**
- Mentored AI/ML course collaborating with IIIT-H Machine Learning Lab, led by Prof. C.V. Jawahar & Prof. Anoop Namboodiri.
- Created instructional tutorials and conducted lab sessions, providing guidance to industry professionals.
- Presented lectures on various machine learning and deep learning topics to the course participants.

☆ **Programmer Analyst** - Cognizant Technology Solutions, Pune

Dec 2015 - Apr 2017

- Collaborated with the data science team to craft several proof-of-concepts, aiming to construct machine learning capabilities.

PUBLICATIONS ([Google Scholar](#))

- [Towards Real-Time Analysis of Broadcast Badminton Videos](#) | Arxiv Preprint | 2023 | [Code Blog](#)
- [TRAQID - Traffic Related Air Quality Image Dataset](#) | British Machine Vision Conference | BMVC, 2024 (Submitted)
- [IoT-based AQI Estimation using Image Processing and Learning Methods](#) | World Forum for Internet of Things | WF-IoT, 2022 | [Code Blog](#)
- [IoT and ML-based AQI Estimation using Real-time Traffic Data](#) | World Forum for Internet of Things | WF-IoT, 2022

PATENTS FILED

- [System and Method for Implementing an Experiment Remotely and Determining an Output Using a Computer Vision Mode](#) | [U.S. Patent Office](#) | Feb, 2023
- [System and Method for Digitizing an Analog Water Meter Using Machine Learning](#) | Indian Patent Office | May, 2021

EDUCATION

MS by Research (Computer Science & Engineering) | International Institute of Information Technology, Hyderabad | 2023

- Specialized in Computer Vision, Graph Neural Networks, NLP & Large Language Models.
- Advised by Prof. Sachin Chaudhari and Prof. CV Jawahar.

Bachelor of Technology (Computer Science & Engineering) | Institute of Engineering & Management, Kolkata | 2015

PROJECTS

Neural Graph Execution | GNN, Optimization, PyTorch

- Created a comprehensive pipeline for optimizing System-on-Chip (SoC) that addressed standard graph algorithms by employing Graph Neural Networks (GNNs) as an initial approximation, succeeded by combinatorial optimization solvers.

Real-Time Structured Analysis for Broadcast Badminton Videos | DL, CV, PyTorch

- Established a real-time system for acquiring structured analysis from live broadcasted badminton videos. [\[Website\]](#)
- Executed object detection and localization on players, enabling the measurement of their on-court distance coverage in live games during the [Premier Badminton League \(PBL\) - 2019](#).

COURSES

- **Deep Learning Specialization** | Coursera | 2018
- **Applied Machine Learning in Python** | Coursera | 2017
- **Programming, Data Structures and Algorithms using Python** | NPTEL | 2017
- **Introduction to Machine Learning** | NPTEL | 2016

VOLUNTEERING

Mentor | IIIT Hyderabad | Jul 2019

- Spoke on real-time sports analysis using broadcast badminton videos while discussing the entire pipeline, from data collection to training models for player activity analysis.