

Nitin Mane

AI/ML Engineer, Software Engineer and Mechatronics Researcher - building production-grade ML systems, RAG/LLM workflows, and time-series anomaly detection for industrial and research applications.

AI/ML Engineering | Software Development | Robotics & Research

Technical Skills

AI/ML Engineering
Deep Learning: PyTorch, TensorFlow
Time-Series & Anomaly Detection
LLM / RAG Prototyping
Computer Vision
Data Engineering & Pipelines
Cloud Deployment: AWS / GCP
Docker, Kubernetes, Kafka
Embedded Systems & Mechatronics
Technical Mentorship

Profile Summary

AI/ML Engineer with 4+ years of experience in end-to-end ML pipelines, time-series anomaly detection, and cloud-deployed applications on **AWS** and **GCP**.

Currently pursuing **M.Tech in Mechatronics Engineering** at **IIT Bhilai**, with focus on Machine Learning, Computer Vision, Digital Image Processing, and Robotics.

Hands-on with **PyTorch**, **TensorFlow**, **LangChain**, **ChromaDB**, Docker, Kubernetes, and Kafka for research-to-production ML workflows.

Built a data production pipeline that reduced operation time by **60%**, enabling near real-time model delivery for industry clients at Infinity Tech Resources.

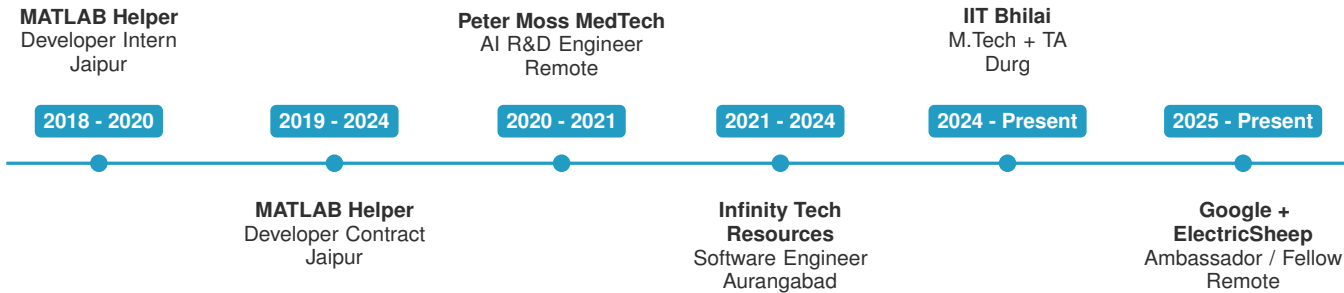
Published author at **ACM IKDD Conference on Data Science 2025** for Autograder+ and SSRN for YOLOv5 with Adaptive Kalman Filter.

Intel Software Innovator, OpenVINO Certified Trainer, and Chair - **IEEE CEDA Nagpur Chapter**; active workshop trainer for Arm, Google, and Intel communities.

Ranked **12th globally** at Intel oneAPI Hackathon 2023; recognised across Google Solution Challenge, IEEE R10 HAC, and AWS Robotics Scholarship.

Strong communicator and mentor with full-time Teaching Assistant experience at IIT Bhilai across Computer Vision, DIP, and Python.

Career Timeline



Leadership & Soft Skills

Communication Mentorship
Team Collaboration Analytical Thinking
IEEE Leadership Technical Training

Education

M.Tech (Mechatronics Engineering) - Pursuing 2024 - 2026
Indian Institute of Technology (IIT) Bhilai
B.Tech (Electronics & Telecommunication) - 6.2/10 2013 - 2020
Maharashtra Institute of Technology, BAMU, Aurangabad
Diploma (Electronics Production & Maintenance) - 5.55/8.0 2009 - 2012
NIELIT, Aurangabad

Work Experience

Since Jul 2024 - Indian Institute of Technology, Bhilai | Teaching Assistant, Full-time

Durg, Chhattisgarh, India

Courses Supported

- **EEL605/EE613 - Digital Image Processing** (Jan - May 2026) | Instructor: Dr. Nitin Khanna - Supported labs, assignment review, and mentoring across spatial/frequency-domain processing, filtering, enhancement, and segmentation fundamentals.
- **CSL100 - Introduction to Programming in Python** (Jul - Dec 2025) | Guide: Dr. Gagan Raj Gupta - Designed weekly lab sheets and exemplar solutions; built rubrics and lightweight auto-grading/test scripts; led doubt-clearing and office hours.
- **DS506 - Computer Vision** (Jan - May 2025) | Instructor: Dr. Nitin Khanna - Reviewed assignments, mentored student projects on PyTorch-based deep learning workflows, and facilitated doubt-clearing on core CV concepts.

Significant Accomplishments

- Co-authored and presented **Autograder+** research at **ACM IKDD Conference on Data Science 2025** alongside Dr. Gagan Raj Gupta.
- Built reproducible auto-grading scripts that scaled feedback delivery for a 100+ student cohort.

Jan 2021 - Jul 2024 - Infinity Tech Resources | Software Engineer, Full-time

Aurangabad, India

Key Result Areas

- Built and optimized a **data production pipeline** for ML model delivery, reducing end-to-end operation time by **60%** and enabling near real-time inference for client deployments.
- Containerized services with **Docker** and structured workflows toward microservice-style deployments; improved reproducibility and parallelized delivery across concurrent client engagements.
- Collaborated with AI training, data engineering, QA, and product teams; supported analytical rigor through versioned datasets and **Git-based** review workflows.

Title: Production ML Pipeline for Client AI Training
Role: Software Engineer / Pipeline Owner
Period: Jan 2021 - Jul 2024
Tech Stack: Python, Docker, Bash, Git, Cloud Storage, REST APIs

Oct 2020 - Sep 2021 - Peter Moss Leukaemia MedTech Research CIC | AI R&D Engineer

Barcelona, Spain - Remote, Open-Source Contract

- Contributed to medical AI R&D and open-source prototyping in a multidisciplinary team of researchers and clinicians; supported documentation, experimentation, and reproducibility.

Nov 2019 - Jul 2024 - MATLAB Helper | Developer, Contract

Jaipur, India

- Provided specialized support across image processing, IoT, and embedded prototyping; built custom MATLAB scripts and guided toolbox usage for global learners.
- Delivered workshops and webinars; supported microcontroller interfaces including Arduino and Raspberry Pi for embedded systems integration.
- Recognized as **Best Employee of the Month** three times between 2021 and 2023.

Other Active Engagements

ElectricSheep - Futurekind AI Winter Fellowship 2025 - 2026

12-week global AI fellowship applying ML to animal protection and environmental sustainability; building a capstone aligned with animal welfare initiatives.

Nov 2025 - Present, Remote

Google Student Ambassador

Driving community initiatives around Google AI tools and responsible AI awareness in peer groups.

Aug 2025 - Present, Remote

Hamoye Data Science Internship Program

Built end-to-end ML workflows across healthcare, fintech, e-commerce, and energy datasets via cohort-based projects.

Feb 2024 - Apr 2024, Remote

Featured Projects

Real-Time Industrial Anomaly Detection in Bar and Rod Mill Using Edge AI Enabled Video Analytics

Bhilai Steel Plant (Bar & Rod Mill, BRM)

2025 - Present

Title: Real-Time Industrial Anomaly Detection in BRM using Edge AI
Role: M.Tech Thesis Researcher / Edge AI Developer
Period: 2025 - Present
Tech Stack: Python, YOLO, OpenCV, NVIDIA Jetson Nano, Jetson Orin NX, Edge AI, Video Analytics

- Contributing to an **INR 3 crore industrial AI project** for real-time anomaly alert detection in the **Stand 16 Looper** operation at BRM.
- Designed and trained a modified YOLO-based model for robust detection under low light, blur, dust, scale formation, and complex industrial backgrounds.
- Improved anomaly alert detection productivity by nearly **75%** through optimized inference and validation on **Jetson Nano** and **Jetson Orin NX**.

Industrial Log Analytics & Anomaly Feedback Generator

Bhilai Steel Plant (Bar & Rod Mill, BRM)

Dec 2025

Title: Industrial Log Analytics & Anomaly Feedback Generator
Role: Lead Developer / ML Engineer
Period: Dec 2025
Tech Stack: Python, Time-Series Analysis, Anomaly Detection, RAG, LLMs, ChromaDB, Streamlit

- Built a time-series log analytics workflow to detect abnormal BRM events and reduce operational noise for plant teams.
- Integrated a **ChromaDB + LLM** feedback module to generate actionable explanations from detected anomaly windows.
- Packaged the workflow in **Streamlit** as a deployment-ready engineering review and monitoring tool.

Autograder+: Semantic Feedback & Concept-Aware Analytics

Published at ACM IKDD Conference on Data Science 2025

Oct 2025

Title: Autograder+
Role: Co-author / ML Engineer
Period: Oct 2025
Tech Stack: Python, Docker, LLMs, PyTorch, LangChain, SBERT, UMAP, Plotly

- Developed an AI-powered autograding framework to evaluate programming submissions beyond pass/fail outcomes.
- Integrated **SBERT-based semantic feedback** and **UMAP-based concept clustering** for instructor analytics.
- Containerized the system using **Docker** for portable and reproducible deployment.

Publications

Autograder+: A Multi-Faceted AI Framework for Rich Pedagogical Feedback in Programming Education.

Sahu V., Gupta G.R., Borikar R., **Mane N.** - *ACM IKDD Conference on Data Science, 2025.*

An Improved Object Tracking and Estimating Using YOLOv5 Model Based on Adaptive Kalman Filter and Efficient Inference Performance on Surveillance.

Mishra A., **Mane N.**, Pagare R., Mishra A., Dixit A., Mishra S., et al. - *SSRN Electronic Journal, 2022.*

Achievements

- **12th Globally** + INR 10,000 award - Intel oneAPI Hackathon for Open Innovation, 2023.
- **1st Prize** - oneAPI AI Analytics Toolkit Workshop Contest, oneAPI DevSummit SEA, 2022.
- **Best Public Choice Award, Mentor** - Google Solution Challenge, 2023.
- **USD 400 Project Funding** - IEEE R10 HAC Community, 2022.

Certifications & Roles

Intel Software Innovator - OpenVINO Certified Instructor / Trainer (Jan 2024 - Present)

Chair, IEEE CEDA Bombay Section - Nagpur Chapter (Jun 2024 - Present)

AWS Robotics ML Engineer - Gold Badge, Udacity Scholarship 2022

Community Trainer - Workshops for Arm, Google, and Intel

Languages

English, Hindi, Marathi

Additional Recognition: Best Employee of the Month three times - MATLAB Helper, 2021 - 2023.