Milav Jayeshkumar Dabgar

Engineering Educator

Full-Stack Developer • AI/Data Science Practitioner



milav.dabgar@gmail.com | Palanpur, Gujarat, India
linkedin.com/in/milavdabgar | milav.in
github.com/milavdabgar | Coursera Profile
youtube.com/@milav.dabgar | instagram.com/milav.dabgar

Executive Summary

Engineering educator with **10+ years** of comprehensive experience spanning electronics hardware development, embedded systems, AI/ML, and full-stack software engineering. Currently pursuing **BS in Data Science and Applications from IIT Madras**. Distinguished by exceptional student mentorship that enabled teams to secure **Rs. 45+ lakhs in innovation funding** (Rs. 25 lakhs from Shark Tank India, Rs. 20 lakhs from iHub Gujarat), resulting in **2 student patents**. Proven expertise in bridging academia-industry gap through innovative teaching methodologies, self-hosted infrastructure development, and real-world system implementation. Working toward **doctoral research in Embodied AI and Cyber-Physical Systems**, bridging learning-based control with real robotic hardware.

Research Interests

Embodied AI & Cyber-Physical Systems: Bridging modern AI (reinforcement learning, computer vision) with rigorous control theory and hardware-software co-design to develop intelligent, autonomous, and physically embodied agents.

Applied Deep Learning & Image Analysis: Advanced machine learning algorithms for complex perception tasks, including medical image analysis and applied AI research.

Data Science & System Modeling: Applying data-driven methodologies, predictive modeling, and system threat forecasting in real-world environments.

List of Publications

Hardware Implementation of YASS (Yet Another Steganographic Scheme) 2015

- Published in *International Journal of Computer Applications*, Volume 120, Number 9.
- Focuses on FPGA-based image steganography and resistance to blind steganalysis attacks.
- View Research Paper

Professional Objectives

Immediate Goal: Pursue doctoral research in Embodied AI and Cyber-Physical Systems, reproducing and extending published robot-learning work on real hardware.

Long-term Vision: Contribute to cutting-edge technological advancements while establishing Gujarat as a leading hub for diploma-level innovation and research-driven education.

Impact Mission: Transform technical education landscape by integrating industrial rigor with academic excellence, fostering sustainable innovation ecosystems, and creating scalable models for interdisciplinary collaboration.

Professional Experience

Lecturer (ECE & ICT) Nov 2016 – Present
Government Polytechnic, Education Department - Government of Gujarat *Palanpur, Gujarat*

- Lead comprehensive technical education across Python, Java, Data Structures & Algorithms (DSA), Database Management Systems (DBMS), Microprocessors & Microcontrollers (MPMC), Embedded Systems, Mobile/Android Application Development, Cyber Security, Computer Networks, and Web Development

- Hold key institutional positions: **IT Convener** (infrastructure strategy), **SSIP Co-Convener** (startup ecosystem), **Training & Placement Member**, and active contributor to MIS and UDAYAM initiatives
- Achieved remarkable student success: mentored teams securing **Rs. 25+ lakhs from Shark Tank India** and **Rs. 20 lakhs through government innovation programs**, resulting in **2 student patents**
- Architected and deployed a dual-platform institutional ecosystem: a high-performance **Astro public website** (gppalanpur.ac.in) and a secure **Next.js Academic Management System** for authenticated student/faculty operations, all running on self-hosted Dockerized Linux infrastructure with automated CI/CD
- Manage an educational YouTube channel producing localized (Gujarati) lecture series, PYQ solutions, and AI-generated audio overviews (NotebookLM) to enhance student comprehension; independently handle end-to-end production using DJI Osmo Pocket 3 and DaVinci Resolve Studio

Electronics & Communication Engineer (R&D) — **Jul 2015 – Oct 2016**
TEXEG India Private Limited (Japan-based Technology Firm) — *Gandhinagar, Gujarat*

- Led end-to-end product development lifecycle for commercial embedded systems in international R&D environment
- Executed circuit simulation, PCB design, firmware development, and control systems implementation
- Delivered complete embedded solutions from concept to production, supporting cross-functional mechanical engineering teams

Research & Development Intern — **Aug 2014 – Jul 2015**
eiTRA - eInfochips Training & Research Academy Ltd — *Ahmedabad, Gujarat*

- Gained comprehensive foundation in FPGA Prototyping and industry best practices
- Developed proficiency in advanced debugging techniques and hardware-software integration strategies

Technical Expertise

Programming Languages:
- Java, Python, JavaScript (ES6+), C/C++
- R, SQL, Assembly Language
- HTML5, CSS3, Markdown

Web & Full-Stack Development:
- Next.js, React.js, Vue.js 3, Astro
- Node.js, Express.js, Flask, FastAPI
- SQLite, MongoDB, PostgreSQL
- Redis, Celery, ElasticSearch

Data Science & Machine Learning:
- TensorFlow, PyTorch, Scikit-learn
- Pandas, NumPy, Matplotlib, Seaborn
- Computer Vision, NLP, Deep Learning

Infrastructure & DevOps:
- Linux Server Administration (Ubuntu)
- Docker, CI/CD Pipelines
- Git Version Control, GitHub Actions
- Self-hosted & Cloud Solutions

Embedded Systems & Hardware:
- 8051, PIC, AVR Microcontrollers
- STM32, Arduino, Raspberry Pi, ESP8266
- EagleCAD, Altium, KiCAD
- Multisim, Proteus, LTspice

Engineering Tools & Platforms:
- MATLAB, Simulink, Control Systems
- FPGA Design, Verilog, Digital Design
- Signal & Image Processing
- CAD Tools, Circuit Simulation

Education

Bachelor of Science (BS) in Data Science and Applications — **2021 – Present**
Indian Institute of Technology Madras (IIT Madras) — *Overall CGPA: 7.01/10*

- **Award:** Received 'Certificate of Appreciation' for **Best Course Project in Business Data Management**, officially recognized by Prof. Andrew Thangaraj, Program Coordinator (Featured on LinkedIn)
- **Foundation Level:** Completed (32/32 credits, CGPA: 7.50/10) - Computational Thinking, Mathematics, Programming in Python
- **Diploma Programming Track:** Completed (27/27 credits, CGPA: 7.19/10) - Database Management, DSA, Modern App Development I & II
- **Diploma Data Science Track:** Completed (27/27 credits, CGPA: 6.56/10) - Machine Learning Techniques, Business Analytics, Business Data Management
- **Current Status:** 101/114 credits completed toward full degree (including Degree level & transferred credits)

AICTE QIP PG Certificate in Deep Learning: Fundamentals and Application — **Jun 2025 – Dec 2025**
Sardar Vallabhbhai National Institute of Technology (SVNIT) — *Surat, Gujarat | CGPA: 10/10*

- Completed intensive programme with a perfect 10/10 CGPA
- Secured **Rank 1** in a highly competitive batch of ∼50 participating professors

Master of Engineering(ME), Communication Systems **2013 – 2015**
L.D College of Engineering, Gujarat Technological University *Ahmedabad, Gujarat | CGPA: 8.04/10*

- Specialized in Digital Signal Processing, Wireless Communications, and Advanced Communication Protocols

Bachelor of Engineering(BE), Electronics & Communication **2009 – 2013**
Sal Institute of Technology and Engineering Research, Gujarat Technological University *Gujarat | CGPA: 7.28/10*

- Foundation in Electronics Design, Embedded Systems, and Communication Technologies

Professional Certifications

Coursera Specializations **2016 – Present**

- **Advanced Machine Learning:** Introduction to Deep Learning | Data Science Competition | Bayesian Methods | Reinforcement Learning | Computer Vision | NLP | LHC Machine Learning
- **Machine Learning:** ML Foundations | ML Regression | ML Classification | ML Clustering & Retrieval
- **Deep Learning:** Neural Networks & Deep Learning | Hyperparameter Tuning | ML Projects | CNNs | Sequence Models
- **Recommender Systems:** Non-Personalized Systems | Collaborative Filtering | Evaluation & Metrics | Matrix Factorization | Capstone Project
- **Data Structures and Algorithms:** Algorithmic Toolbox | Data Structures | Algorithms on Graphs | Algorithms on Strings | Genome Assembly
- **Big Data:** Introduction to Big Data | Big Data Modeling | Big Data Integration | ML with Big Data | Graph Analytics
- **Data Mining:** Data Visualization | Text Retrieval | Text Mining | Pattern Discovery | Cluster Analysis
- **Cloud Computing:** Cloud Systems & Infrastructure | Big Data Applications in Cloud
- **Android Development:** Java for Android

NPTEL Excellence & Recognition **2018 – Present**

- **Foundations of Computing:** Discrete Mathematics (2021) | Design and Analysis of Algorithms (2020) - Elite | Programming, Data Structures and Algorithms Using Python (2020) - Elite | Computer Graphics (2020)
- **Systems Domain:** Operating System (2020) - Elite | Computer Networks and Internet Protocol (2018) | Database Management System (2020) - Elite | Introduction to Internet of Things (2018) - Elite | Cloud Computing (2020) | Computer Architecture and Organization (2020)
- **Programming Languages:** Programming in Java (2020) - Elite + Gold | Joy of Computing Using Python (2019) - Elite + Silver | Introduction to R Software (2019) - Elite + Silver
- **Machine Learning & AI:** Introduction to Machine Learning, IIT Kharagpur (2019) - Elite + Silver | Introduction to Machine Learning, IIT Madras (2019) - Elite | Deep Learning - Part 1 (2019) - Elite + Silver | Reinforcement Learning (2019) - Elite
- **Data Science & Analytics:** Data Science for Engineers (2019) - Elite + Silver | Business Analytics and Data Mining Modeling Using R (2019) - Elite + Silver | Business Analytics & Data Mining Modeling Using R - Part II (2018) - Elite | Business Analytics & Text Mining Modeling Using Python (2019) - Elite + Silver | Business Statistics (2019) - Elite | Scalable Data Science (2018)
- **Industry 4.0 & IoT:** Introduction to Industry 4.0 and Industrial IoT (2019) - Elite

Udemy Professional Development **2017 – Present**

- **CCNA Routing and Switching** - Network Infrastructure, Routing Protocols, Switching
- **Machine Learning and Data Science** - Python & R for Data Science, ML Applications
- **Complete Python Masterclass** - Python Programming, Applications, Best Practices
- **Complete JavaScript Course** - Web Development, JavaScript Programming
- **MBA in 1 Course** - Business Fundamentals, Management Principles

Key Projects & Innovations

Institutional Web Portal | ***Astro, JavaScript*** **2026 – Present**

- Developed the public-facing institutional website (gppalanpur.ac.in) using the Astro framework for exceptional performance, modern user experience, and robust SEO.

Smart Academic Portal | ***Next.js, React, Docker*** **2025 – Present**

- Production-ready internal academic management system, serving as the authenticated portal for students and faculty featuring comprehensive admin dashboards and automated workflows.

- Enterprise-grade deployment with self-hosted infrastructure, CI/CD pipelines, and zero-downtime Dockerized deployments managed collaboratively with student contributors.

LogicCraft AMC Platform | ***Vue.js, Flask, Python, RAG*** **2026**

- Developed a full-stack IT service management platform featuring multi-site asset tracking, role-based JWT authentication, and automated ticketing.
- Integrated an AI-powered RAG assistant using ChromaDB and multiple LLM backends to enhance troubleshooting.

IT Service Tracking & Cost Management (Best BDM Capstone) | ***Python, Pandas, Matplotlib*** **2025**

- Analyzed 8 months of service data to optimize IT operations, identifying critical bottlenecks and a 7.1x ROI inventory strategy.
- Authored a comprehensive data-driven blueprint leading to the **Best Capstone Project Award** across the IIT Madras BS program.

Personal Portfolio & Technical Blog | ***Astro, Docker, Nginx*** **2024 – Present**

- Self-hosted portfolio and technical blog at milav.in, built with Astro and deployed with Docker behind a reverse proxy.

System Threat Forecaster | ***Python, Machine Learning, Data Analysis*** **2024 – 2025**

- Developed a comprehensive machine learning pipeline using Python, TensorFlow, and Scikit-learn for system threat prediction and real-time cybersecurity risk assessment.

Scarlett Web Application (MAD2) | ***Vue.js, Flask, PostgreSQL*** **2023 – 2024**

- Built a microservices-style RESTful platform with a Vue.js frontend, integrating Celery and Redis for asynchronous task handling and background processing.

Scarlett Web Application (MAD1) | ***Flask, SQLAlchemy*** **2022 – 2023**

- Developed a comprehensive web application for household service booking featuring a multi-role authentication system and robust role-based access control.

FPGA Image Steganography | ***FPGA, Verilog, DSP*** **2014 – 2015**

- Developed hardware implementation of YASS (Yet Another Steganographic Scheme) for secure communication with resistance to blind steganalysis attacks.

Wireless Data Acquisition System | ***Modbus, Embedded Systems*** **2012 – 2013**

- Designed a multi-device wireless monitoring and control system utilizing Modbus protocol for reliable real-time industrial applications.

Achievements & Recognition

Student Innovation Mentorship Excellence **2018 – Present**

- Mentored students to Achieve exceptional funding success: **Rs. 25 lakhs from Shark Tank India** and **Rs. 20 lakhs from government innovation programs**

Academic Awards **2026**

- **Best BDM Capstone Project Award** for *"Turning 8 Months of Data into a Blueprint for Better IT Service"* (IIT Madras BS) - Featured on LinkedIn by Program Coordinator, Prof. Andrew Thangaraj

NPTEL Excellence & Recognition **2018 – Present**

- **NPTEL EVANGELIST** (Dec 2020) - Top recognition for exceptional contribution to online learning ecosystem
- **NPTEL DISCIPLINE STAR - Computer Science** (Dec 2019, Dec 2020) - Top 1% performer nationally
- **NPTEL ENTHUSIAST & MOTIVATED LEARNER** (Dec 2019, Dec 2020) - Consistent excellence in learning
- **NPTEL BELIEVER** (Jul-Dec 2019, Jan-Apr 2020, Jul-Dec 2020) - Sustained engagement and performance
- **24 Course Completions with 18 Elite Performances** - Demonstrating mastery across diverse technical domains