

Dhruvadeep Malakar

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EDUCATION

Indian Institute of Technology Palakkad

Bachelor of Technology in Data Science

Palakkad, KL

Nov 2022 – Present

Maharishi Vidya Mandir

Science Stream (CS)

Guwahati, AS

Aug 2020 – Mar 2022

EXPERIENCE

Texas Instruments

Software Developer Intern

May 2025 – Jul 2025

Bangalore, India

- Worked under IT Solutions, a core Business Support Entity at TI.
- Developed scalable full-stack applications and data pipelines for internal and external use cases.
- Built and deployed an end-to-end Client Lifecycle Management system to automate hardware requests and renewals tailored to job profiles.
- Collaborated cross-functionally to deliver high reliability, role-based access control, and cost-efficient infrastructure management.

PROJECTS

Communicate (Zoom-like Collaboration Suite From Scratch)

Aug 2025 – Dec 2025

Java, .Net (C-Sharp), Azure Cosmos, Azure DevOps, CI/CD

- Led end-to-end development of a large real-time collaboration system: chat, voice/video streaming, and multi-device communication built from low-level network calls upward.
- Served as Project Manager for a 30-member Java and .NET ecosystem, managing planning, execution, and cross-team integration while also contributing production code.
- Implemented cross-communication between JavaFX and WPF clients via a RPC pure OOP core with an async-first approach for non-blocking media and messaging pipelines.
- Built reliable CI/CD using Azure DevOps and integrated Azure services to support releases, automation, and operational stability.

Client Lifecycle Management

May 2025 – Jul 2025

OracleDB, Python, Next.js, FastAPI, Cron

- Automated employee laptop lifecycle based on job roles, enabling AI engineers to request GPUs and reducing mismatched resource allocations.
- Designed a full-stack system with administrative portals for managing manufacturers, devices, and persona-based eligibility.
- Built notification and email reminder workflows using cron jobs to streamline asset renewal without human intervention.

College Life (AI-Powered Campus Super App)

Aug 2025 – Nov 2025

React Native, TypeScript, FastAPI, PostgreSQL, RAG, Multi-Agent AI

- Co-built a cross-platform mobile app to unify academics, social features, campus marketplace, study-buddy matching, and wellness tracking into a single student-centric platform.
- Integrated AI features including multi-agent routing and RAG-backed Q&A for campus-specific assistance, plus automation-oriented workflows for common student tasks.
- Designed scalable backend APIs with authentication, structured data models, and performance-oriented storage to support real usage.

Viśva Mitra – One Assistant. Infinite Possibilities.

Jan 2025 – Jul 2025

Agentic AI, MCP, Voice Control, Docker, CI/CD

- Unified VoicePilot, ViZearch, and MCP into one agentic assistant that can control computers using voice and commands, bridging protocols to real product workflows.
- Built MCP client-server infrastructure and a centralized registry for publishing, discovering, and moderating MCP tools with lifecycle management.
- Reverse engineered the MCP protocol to manage service lifecycles, deployments, and remote control of servers; shipped containerized pipelines for consistent environments.

POSITIONS OF RESPONSIBILITY

YACC Head | President

IIT Palakkad

Mar 2023 – Present

Palakkad, KL

Project Manager (Communicate)

Cross-platform JavaFX & .NET WPF ecosystem

Aug 2025 – Dec 2025

IIT Palakkad

PUBLICATIONS / POSTERS

WMT2025 Poster Acceptance

Sep 2025

Low-Resource MT, LoRA Fine-tuning, IndicTrans2, NLLB, Data Augmentation

- DoDS-IITPKD: Submissions to the WMT25 Low-Resource Indic Language Translation Task
- Accepted as a poster at WMT2025 (EMNLP 2025 workshops); submission #122.
- Worked on low-resource MT for Khasi, Mizo, Assamese, and Bodo using fine-tuned multilingual models with LoRA and augmentation with external corpora.

State Conference Poster Presentation: Principled Conditioning in Diffusion Models

Nov 2025

Diffusion Models, Classifier-Free Guidance (CFG), Energy-Based Guidance, Bayesian Conditioning

- Presented a poster on principled conditioning for diffusion models, covering posteriors, classifier-free guidance, and energy-based (Boltzmann) guidance for controllable generation.
- Explained the quality–diversity trade-off under varying guidance strength and compared guidance strategies for stronger conditional adherence than standard conditioning baselines.
- Discussed generalized control mechanisms to steer sampling trajectories and motivate more controllable alternatives to prompt-only text-to-image pipelines (e.g., Stable Diffusion-style workflows).

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, C, Go, SQL (Postgres, MySQL, SQLite), Scala

Frameworks / Libraries: React, React Native, Node.js, FastAPI, TailwindCSS, Scikit-learn, TensorFlow, PyTorch

Big Data: Apache Spark, Apache Hadoop, Apache Hive, Apache Kafka

Cloud / DevOps: AWS, Azure, Oracle Cloud, DigitalOcean, Azure DevOps, GitHub Actions, Docker, Git, Nginx

Databases: PostgreSQL, MySQL, MongoDB, Redis, PocketBase, Firebase

Developer Tools: VS Code, GitHub, Adobe Photoshop, Figma, CUDA

ML/DL Tooling: NumPy, Pandas, Matplotlib, MLflow, Jupyter