

# 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

May 2025 – Jul 2025

Software Developer Intern

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

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<b>YACC Head   President</b> <i>IIT Palakkad</i>	Mar 2023 – Present <i>Palakkad, KL</i>
<b>Project Manager (Communicate)</b> <i>Cross-platform JavaFX &amp; .NET WPF ecosystem</i>	Aug 2025 – Dec 2025 <i>IIT Palakkad</i>

## PUBLICATIONS / POSTERS

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<b>WMT2025 Poster Acceptance</b> <i>Low-Resource MT, LoRA Fine-tuning, IndicTrans2, NLLB, Data Augmentation</i>	<i>Sep 2025</i>
<ul style="list-style-type: none"><li>DoDS-IITPKD: Submissions to the WMT25 Low-Resource Indic Language Translation Task</li><li>Accepted as a poster at WMT2025 (EMNLP 2025 workshops); submission #122.</li><li>Worked on low-resource MT for Khasi, Mizo, Assamese, and Bodo using fine-tuned multilingual models with LoRA and augmentation with external corpora.</li></ul>	

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<b>State Conference Poster Presentation: Principled Conditioning in Diffusion Models</b> <i>Diffusion Models, Classifier-Free Guidance (CFG), Energy-Based Guidance, Bayesian Conditioning</i>	<i>Nov 2025</i>
<ul style="list-style-type: none"><li>Presented a poster on principled conditioning for diffusion models, covering posteriors, classifier-free guidance, and energy-based (Boltzmann) guidance for controllable generation.</li><li>Explained the quality–diversity trade-off under varying guidance strength and compared guidance strategies for stronger conditional adherence than standard conditioning baselines.</li><li>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).</li></ul>	

## TECHNICAL SKILLS

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<b>Languages:</b> Python, Java, JavaScript, C, Go, SQL (Postgres, MySQL, SQLite), Scala
<b>Frameworks / Libraries:</b> React, React Native, Node.js, FastAPI, TailwindCSS, Scikit-learn, TensorFlow, PyTorch
<b>Big Data:</b> Apache Spark, Apache Hadoop, Apache Hive, Apache Kafka
<b>Cloud / DevOps:</b> AWS, Azure, Oracle Cloud, DigitalOcean, Azure DevOps, GitHub Actions, Docker, Git, Nginx
<b>Databases:</b> PostgreSQL, MySQL, MongoDB, Redis, PocketBase, Firebase
<b>Developer Tools:</b> VS Code, GitHub, Adobe Photoshop, Figma, CUDA
<b>ML/DL Tooling:</b> NumPy, Pandas, Matplotlib, MLflow, Jupyter