




# MALHAR INAMDAR

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## EDUCATION

### Pune Institute of Computer Technology, India

2023 - 2027

*Bachelor of Engineering (B.E.) in Electronics and Telecommunication*

9.23/10.00

- **Coursework:** Data Structures, Algorithms, Digital Circuits, Differential Equations, Linear Algebra, Vector Calculus
- **MOOCs:** Machine Learning Specialization, Deep Learning Specialization (Coursera)

## TECHNICAL SKILLS

**Programming Languages:** Python, C++, C, Javascript, Java

**Tools & Frameworks:** PyTorch, TensorFlow, LangChain, OpenCV, NumPy, Pandas, Scikit-learn, Transformers, FSL, Grad-CAM, Flask, Streamlit, RESTful APIs, PostgreSQL, Node.js, Crawl4AI, VectorDB, FastAPI

**Software:** Git, GitHub, Flask, VS Code, Streamlit, TensorDock, Azure Cloud, HuggingFace, Weights & Biases, Docker

## PUBLICATIONS

### 1. Regional Tiny Stories: Using Small Models to Compare Language Learning and Tokenizer Performance

Year - 2025

- A framework for development of Small Language Models (SLMs) for Indian regional languages, serving both as a practical alternative to LLMs and as a foundation for comparative analysis of tokenization strategies, machine translation performance, and linguistic complexity.
- Trained models ranging from 5M to 150M parameters; demonstrated that a 53M parameter SLM can achieve GPT-3.5-comparable performance for short story generation tasks.
- Co-First Authored the publication, available as a preprint at arXiv. Publication in review at EMNLP 2025.

## EXPERIENCE

### Froncort.AI

March 2025 – May 2025

*AI Engineer*

*Pune, India*


- Led the R&D efforts as the Team Lead, focusing on applying Reinforcement Learning with Human Refinement (RLHR) to AI agents for the project "AI System for Life Sciences and Healthcare".
- Developed multi-agent systems using Google's Agent Development Kit (ADK) for dynamic orchestration of complex clinical workflows.

### Vizuara AI Labs

Oct 2024 – Present

*Research Intern*

*Pune, India*

- Working under [Dr. Raj Dandekar](#) conducting research in developing Small Language Models (SLM) for regional Indian languages analysing tokenizer performance, inference results and linguistic complexities in multilingual low resource settings.
- Explored the minimum Small Language Model (SLM) architecture required for effective training on three regional languages (Hindi, Marathi, Bengali), inspired by the TinyStories paper using cloud based GPU servers.
- Tested several Indic tokenizers to evaluate tokenization efficiency and linguistic complexity and investigated whether certain languages inherently require larger model architectures for effective representation and comprehension.
- Explored the usage of Rényi entropy and language morphology for tokenizer efficiency and language complexity analysis. Publication currently in review at EMNLP 2025. Preprint available at arXiv 

### Pune Institute of Computer Technology

Sep 2024 – Present

*Research Intern*

*Pune, India*

- Working under [Dr. Geetanjali Kale](#) conducting research in contrastive learning using Vision Transformers for video temporal data.

### PICT Robotics

Oct 2023 – Jan 2025

*Technical Member*

*Pune, India*

- Selected as a Technical Member of PICT Robotics, a dedicated college club for robotics. Designed and 3D printed components for a robotic arm; researched soft gripper mechanisms.
- Designed PCB circuits and Fusion 360 CAD Designs for robot designing and built multiple robots, with ESP32, IR, Ultrasonic, Hall sensors, like line following robot, ultrasonic sensor robot, hall sensor robot.

## PROJECTS

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### Vaidya Nidaan (01/2025 - 02/2025)

 [GitHub Link](#)

*CNN, scikit-learn, GradCAM, Tensorflow, Pandas, NodeJS, FSL, Transformers, Vite, CSS, ReactJS, React Native*

- Led team to 3rd place out of 400+ teams in PICT Techfiesta Hackathon 2025, developing an AI-based diagnostic tool to assist doctors in diagnosing Alzheimer's through MRI scan analysis using medical biomarkers.
- Implemented Grad-CAM as Explainable AI technique for visual explanations to improve diagnostic interpretability, developed image-text chatbot for diagnostic assistance, and built comprehensive website and mobile app for real-time MRI analysis.
- Leveraged FMRIB Software Library (FSL) to detect biomarkers including hippocampal volume and white/gray matter content, generating comprehensive medical reports with Grad-CAM outputs and RAG pipeline explanations referencing research papers.
- Deployed VGG-19 model with data augmentation techniques to handle imbalanced datasets, achieving over 95% accuracy in Alzheimer's prediction from MRI scans.

### Stable Diffusion from scratch (10/2024 - 11/2024)

 [Github Link](#)

*PyTorch, NumPy, Transformer, tqdm, lightning, pillow, UNet, VAE, CLIP Encoder*

[Paper Link](#)

- Implemented the "Denoising Diffusion Probabilistic Models" research paper from scratch using PyTorch.
- Constructed generative models for text-to-image, image-to-image functionality producing high quality images based on input prompt.
- Implemented the architecture using the Variational Autoencoder (VAE) utilizing U-Net and CLIP Encoder for denoising to generate output image.
- Ensured semantically meaningful output images were produced using suitable attention mechanism incorporated in the pipeline.

## ACHIEVEMENTS

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### Selected to attend Microsoft Research India Academic Summit 2025

June 2025

- Selected among top students nationwide to attend Microsoft Research (MSR) India's premier academic summit held for researchers, academic professors and PhD, Master's and undergraduate students.

### 3rd in PICT Techfiesta International Hackathon

Feb 2025

- Our team stood 3rd for our project Vaidya Nidaan aimed towards patients ailing with Alzheimer's disease out of participation of more than 400+ teams internationally.

### Cretronix Runner-up Credenz'24

April 2024

- Our team of two, was the runner-up in the electronics circuit and arduino microcontroller programming competition at PICT IEEE's annual technical fest Credenz.

### 2nd in research idea presentation track Pulzion'24

Oct 2024

- Stood 2nd in the research Idea Presentation track of Paper Presentation competition held as part of PICT ACM's annual technical fest Pulzion.