Pranav Rao

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SUMMARY

Final Year CS Undergrad student skilled in AI & ML with a special focus on LLMs

EDUCATION

Degree	Institute	CGPA/Percentage	Year
B.Tech CSE	Indian Institute of Technology Palakkad	8.95 (Current)	2021-Present
Senior Secondary	New Horizon Scholars School, Thane (CBSE)	97%	2021
Junior Secondary	Dhyan Ganga International School, Thane (ICSE)	95.6%	2019

WORK EXPERIENCE

- **Machine Intelligence Program, IIT Bombay** *May - July 2024*
  ML Intern Certificate
  - Multi-Modal RAG-based LLM for Information Retrieval
  - Feedback assisted Agentic RAG application with textual and visual I/O capabilities

PROJECTS

- **Incorporating Temporal Commonsense in Conversational Chat bot** *Jan 2024 - Present*
  BTP CS4110 Repo Link
  - Current Final Year Project done as a duo
  - Building an AI system with the ability to understand the underlying temporal commonsense in conversations

- **Agentic RAG System using Pathway** *Oct - Dec 2024*
  Tech Meet 13.0 Hackathon Repo Link
  - Done as a team of 7
  - Agentic RAG which can classify and retrieve context based on the query type

- **Effect of Entanglement on Cooperative Games** *Aug - Dec 2023*
  OELP ID3801 Report Link
  - Mentored Project on constructing hypothetical games that demonstrate the advantage of quantum strategies over classical strategies

- **Hotel Management Portal** *Jan - May 2024*
  CS3120 Repo Link
  - Created a website for hotel management (DBMS Group Project done as a trio)

- **Spell Checker** *Jul 2023*
  Individual Website Link
  - Individual project on a Spell Checker tool, based on Naive Bayesian Classification

- **Marching Squares** *Apr 2024*
  CS5016 Website Link
  - Implementation of Marching Squares Algorithm as an individual course project

TECHNICAL SKILLS

- **Programming Languages**: Python, SQL
- **LLMs and RAG Applications**: Built fine-tuned chat bots and RAG chains using Langchain, Langgraph, Langsmith, DSPy, HuggingFace
- **Vector Databases**: Pinecone, Weaviate, Lancedb
- **Machine Learning**: Built models involving transformers; can use Scikit-Learn & PyTorch
- **Computer Vision**: Proficient in Theory; Utilized YOLO, and UNet
- **Tools**: Docker, AWS, Git, LaTeX, PostgreSQL, Processing
- **Quantum Computing**: Can utilize algorithms such as QFT, QAOA, Grover, QPE, can utilize Qiskit
- **Areas of Interest**: Data Science, Quantum Computing

ELECTIVES TAKEN

- **NPTEL Introduction to Machine Learning**: Link, Learned concepts of various Supervised & Unsupervised algorithms
- **Computer Vision**: Learned approaches and models for Object Detection, Semantic Segmentation, 3D Vision, etc.
- **Software Engineering**: Learnt Design patterns, and Server-less Cloud Computing
- **Parallel Programming**: Learned basics of CUDA programming, OpenMP, & MPI
- **Quantum Computing**: Learned how to apply some well-known Quantum Algorithms
- **Cryptography**: Learned Public & Private encryption mechanisms
- **Computational Methods and Applications**: Learned how to implement ODEs, Interpolation, etc
- **Abstract Algebra**: Learned basics of Groups, Rings & Fields

Training and Workshops

Workshop Name	Institute	Certificate	Duration
Qiskit Global Summer School 2023	Qiskit, IBM Quantum	Link	July 2023
Quantum Computing: Introductions to algorithms and implementations using Qiskit	Qkrishi, IISER Tirupati	Link	May - Jul 2022
Petrichor Machine Learning and Deep Learning Workshop	IIT Palakkad	Link	Feb 2023
NPTEL German 1	NPTEL IIT Madras	Link	Aug - Nov 2024

Soft Skills

- **Languages:** English, Hindi, German

Positions of Responsibility

- **Literary Convener,** Cultural Council, IIT PKD — *May 2023 - May 2024*
- **Secretary,** Akshar Club, IIT PKD — *Oct 2022 - May 2023*

Achievements

- **7th National Level NELTAS ECAT Grand Finale 2017-18,** Medal for Meritorious Performance — *Link*
- **Vidyarthi Vigyan Manthan 2019,** 3rd Rank in Maharashtra State and 1st Rank in Thane District — *Link*

Extra Curricular Activities

- **English Creative Writer,** Writing articles, plays, poems, stories, etc.; Part of numerous Creative Content teams — *Link*