PAWAN MUGALIHALLI

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GitHub LinkedIn LeetCode CodeChef

Education

Bachelor of Technology in Computer Science Engineering
Indian Institute of Information Technology, Kottayam. ***CGPA:8.95***
(Graduation: 2026) (as of Nov 2022 – Nov 2024)

Higher Secondary Education (State Board)
Tirumala Engineering College, Vizag. Percentage: **96.2%** (2021)

Projects

Mini 2D Metaverse with Gaming & Chat | *Java, Spring Boot, WebSockets, PostgreSQL, Docker* **(GitHub Link | Website)**

- Built a **mini 2D metaverse** with **real-time multiplayer interactions**, integrating **Tic-Tac-Toe gaming** and a **chat system**.
- Implemented **WebSockets & STOMP** for seamless real-time chat and game state synchronization between players.
- Developed a turn-based Tic-Tac-Toe game with automatic win detection and player matchmaking.
- Secured user authentication with Spring Security, ensuring safe access control.
- Integrated **PostgreSQL** for persistent storage of game sessions, chat history, and user data.
- Containerized the application with **Docker** and **deployed on Render**, ensuring scalability, high availability, and seamless updates.

Transformer Network Implementation | *Python, Pytorch.* **(GitHub Link)**

- Implemented a Transformer architecture from scratch using PyTorch
- Designed and implemented a Transformer model inspired by the "**Attention Is All You Need**" paper, incorporating core components such as multi-head self-attention, positional encoding, encoder-decoder layers, and efficient masking mechanisms.
- The architecture consists of a **6-layer encoder-decoder structure, 8 attention heads**, and an **embedding size of 512**.
- Applied advanced techniques such as residual connections, layer normalization, and dropout for stable training and improved performance.
- Demonstrated model performance by processing tokenized source and target sequences, showing accurate shape output for sequence-to-sequence tasks.

Plant Disease Prediction | *Python, TensorFlow, Keras, ResNet-18, Data Augmentation.* **(GitHub Link)**

- Developed a deep learning model for plant disease classification using a labeled dataset of tomato crop leaf images.
- Robust performance metrics (**precision: 99.04%, recall: 98.9%, F1-score: 98.92%**).
- Utilized ResNet-18 as the backbone model for feature extraction, leveraging its pre-trained weights and fine-tuning the layers for optimal performance on the plant disease dataset.
- Applied advanced data augmentation techniques (rotation, flipping, zooming) to improve model generalization and mitigate overfitting.

Experience

Parallel and Distributed Computing Lab Manual, Team Leader.
Department of Computer Science, IIIT Kottayam **(Nov 2024 – Dec 2024)**

- Led a team of 9 members to create a comprehensive lab manual for the "**Parallel and Distributed Computing**", covering all labs and exercises relevant to the course.
- Worked under the guidance of **Dr. Balasubramanian P, Assistant Professor, IIIT Kottayam**.

Achievements

- Solved **1000+** problems across platforms like LeetCode, GFG, CodeChef and Codeforces.
- **4-star** CodeChef coder (Max rating:1803).
- Secured **Global Rank 44** in CodeChef Starters 137 Division 3.
- Leetcode rating: 1885 (**Top 4.82%**) Level: **Knight**.
- Completed a **250-day** daily challenge streak on LeetCode, solving **500+** problems.

Skills

- **Languages:** C++, Python, Java, JavaScript.
- **Frameworks and Libraries:** Spring Boot, TensorFlow, Scikit-Learn, Pandas, NumPy, Matplotlib.
- **Applications:** RESTful APIs, Database Integration (SQL/NoSQL), Microservices**,** Classification, Regression, Computer Vision, Natural Language Processing.
- **Data Structures and Algorithms**
- **Competitive Programming:** CodeChef, Codeforces, LeetCode.