Gobind Singh

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Education

Birla Institute of Technology and Science, Pilani, BE(Hons) in Computer Science — Oct 2022 – July 2026

- GPA: 8.8/10

Experience

Research Intern, CSIR-CEERI – Pilani, IN — August 2024 – Present

- Working on ECG data analysis using waveform data from the PTB-XL dataset.
- Exploring long-range dependencies in ECG data by integrating attention modules to previously existing architecture. Improved baseline AUC score to 0.9339 from the current SOTA model.
- Working towards publishing research papers in classification tasks using form, rhythm, diagnostic classes.
- Using deep learning frameworks to create lightweight models for industrial product usage.

Research Intern, DeepTek AI Pvt Ltd – Pune, IN — May 2024 – July 2024

- Performed hyperparameter tuning (from scratch and pretrained model) and finetuning on the densenet(121) model using the pneumothorax dataset.
- Implemented the model and metrics (F1, precision) from scratch and obtained current benchmark results.

Software Intern, Tekenlight Solutions Pvt Ltd – Bangalore, IN — May 2024 – July 2024

- Used OpenAI, Gemini APIs to create a document scanning system to categorize and extract data from PDFs using OCR, boosting processing efficiency.
- Implemented a Python library, reducing manual entry time and streamlining data handling workflows.
- Used efficient prompting techniques, RAG based approaches to boost accuracy in retrieving data from invoice pdfs and converting it to JSON output format.

Deep Learning Intern, IIIT – Bangalore, IN — Dec 2023 - Mar 2024

- Explored Continual learning on pre-trained models using Plant data to improve generalization of the model in classification tasks.
- Efficiently managed reading papers and writing code for data augmentation and pre-processing to fit the model requirements.
- Addressed catastrophic forgetting in CL via LoRA (Low-Rank Adaptation) and Task Arithmetic, improving model retention in the Plant-Doc dataset.

Projects

Autonomous Robot Navigation - Robotics

- Used ROS in Ubuntu 20.04, Deep learning algorithms and SLAM (Simultaneous Localization And Mapping) to perform autonomous navigation of the FireBird VI robot.
- Used April tags and TagSLAM to generate topological map getting positions of the Tags with respect to the tag0.
- Later used RTAB Map to get the topometric map and the point cloud map of the surroundings by manually navigating the Firebird VI robot.
- Implemented a regression algorithm to find the transform function between the pose of the topological map and the point cloud map.

Database System project

- Created and normalized 50+ SQL tables for NBA and Formula 1 datasets from (1NF to BCNF), improving query efficiency and reducing disk-seek time.
- Integrated Java Swing with MySQL via JDBC to build a user-friendly sports stats portal with secure login and database to store different users.

Uppal Model Checker

- Developed a library management system in UPAAL applying core CS fundamentals ensuring no deadlock, safety and standard wait time.
- Implemented research papers to handle the deadlock conditions and reducing wait time for each individual in queue (only for 2).

Extra-Curriculars

Basketball Team Captain

- Participated in various tournaments representing our college team to win medals.

IEEE Student Club Member

- Part of the Machine Learning Special Interest Group involved in reading research papers weekly.