Balbir Prasad

📱 (+91) 6378533796

✉ prasadbalbir1056@gmail.com

⭘ github

in Linkedin

EDUCATION

Indian Institute of Technology(ISM) Dhanbad, Bachelor of Technology   **8.0/10.0** Dec 2020—May 2024

EXPERIENCE

IISc Bangalore | C++ Developer Intern   **May-July 2023**
- Added **3 additional criteria** to produce a list of **pareto optimal** journeys for **10000+** users.
- Employed the **OOP** principle to write modular code in **C++17** to ensure the code **reusability**, and **extensibility**.
- Implemented the **KD tree** for finding the nearest point, resulting in a significant reduction of preprocessing time by **46%**.
- Processed and analyzed the **TFL dataset** for validating the model using **Python** and **Pandas**.

Plaid Inc, Tokyo, JP | Software Engineer Intern   **July - August 2023**
- Engineered and implemented an intelligent Slack bot leveraging **Node.js, Dialogflow**, and **GPT-4** for dynamic intent recognition and generative AI responses.
- Reduced operational costs by optimizing cloud resource provisioning for the bot infrastructure on **GCP** using **Terraform**.
- Integrated GPT-4 API to provide comprehensive responses for queries outside of predefined Dialogflow intents.

Mercor | AI Benchmarker   **August - October 2024 (Part time)**
- Evaluated and compared performance of **4+ LLMs** such as GPT4o, Gemini Pro 1.5, Claude, etc on various prompts.
- Engineered **100+** prompts for LLMs, preparing **SFT** datasets and reviewing for wide area of tasks such as code generation, code summarization, language translation, etc.

TEXMiN Innovation Hub | Technical Project Assistant   **July - Dec 2024**
- Developed a spectral-spatial transformer model with dense connections for **hyperspectral** image classification, improving accuracy by **7-10%** over traditional CNN-based methods.
- Implemented an **attention**-based transformer network for hyperspectral image analysis, enhancing feature extraction and achieving a **20%** reduction in misclassification rates.

CodeClause, Pune | Data Science Intern   **March 2023**
- Developed a **barcode detection** model for daily life products, achieving an accuracy rate of **90%** in detecting and decoding barcodes, resulting in a **20%** increase in scanning efficiency compared to traditional methods.

PROJECTS & PUBLICATIONS

A Computational Analysis of Flow Dynamics and Heat Transfer in a Wavy Patterned Channel using Physics-Informed Neural Networks
Physics of Fluids, *AIP Publishing* • Link

- Co-authored and published a study leveraging **Physics-Informed Neural Networks (PINNs)** to model fluid flow and heat transfer in wavy, artery-like channels.
- Designed and validated the PINN framework against **Computational Fluid Dynamics (CFD)** benchmarks, capturing key behaviors like **flow separation** and **thermal distribution**.
- Demonstrated PINN's potential as a mesh-free, physics-constrained alternative to traditional CFD methods.

Nasal Septum Deviation Quantification and Pressure Correction Pre- and Post-Septoplasty Using Deep Learning
- Developed a **deep learning**-based pipeline to automatically detect and quantify nasal septum deviation from medical imaging data, aiding pre- and post-surgical assessment.
- Implemented a **UNet** architecture in **PyTorch** for pixel-wise **segmentation** of the nasal septum from 2D slices of CT/MRI scans.
- Aimed to measure deviation severity and estimate airway pressure correction, enabling more accurate evaluation of **septoplasty** outcomes.

Granite Porosity Prediction under Varied Thermal Conditions Using Machine Learning Models
Earth Science Informatics, *Springer* • Link

- Co-authored a research paper predicting **granite porosity under elevated temperatures**—a key factor for **geothermal energy systems**.
- Implemented and compared several machine learning models, including **Random Forest, KNN, and XGBoost**, to estimate porosity under thermal stress.
- Evaluated models using comprehensive metrics: R^2, **RMSE, MAE**, etc. achieving high predictive accuracy.

SKILLS

Core Skills	Data Structures & Algorithms, Machine Learning, NLP
Programming Languages	Python, SQL, C, C++
Libraries/frameworks	Pytorch, Tensorflow, Numpy, Pandas, Scikit-learn
Devs	Git, Docker