Bhargav Limbasia

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EDUCATION

University of Southern California - Los Angeles, CA **Jan 2025-May 2026**

Masters of Science in Applied Data Science
- **Coursework:** Foundations of Data Management, Research Methods and User Studies, Machine Learning for Data Science, Analyzing Big Data, Artificial Intelligence, Distributed Database Systems, Foundations and Applications of Data Mining, Data Visualization.

Pandit Deendayal Energy University - Gujarat, IN **Jun 2020-May 2024**

Bachelors of Computer Science and Engineering
- **Coursework:** Artificial Intelligence, Data Intelligence, Digital Image Processing, Pattern Recognition, Database Management Systems, Advanced Web Development, Deep Learning, Applied Analytics and Machine Learning, Data Mining, Computer Networks.

TECHNICAL SKILLS

Machine Learning & Deep Learning: Scikit-Learn, TensorFlow, PyTorch, Keras, Squeeze-and-Excitation Networks, LSTM, ARIMA, TorchIO, MONAI

Natural Language Processing & Vision: OpenAI GPT, Transformers, Prompt Engineering, OpenCV, CNNs, Mediapipe

Database & Deployment: MongoDB, PostgreSQL, Oracle, SQL Server, Azure, AWS, Firebase, Docker

Pipelines & Tools: Pandas, NumPy, PyMongo, Streamlit, H2O Wave, Matplotlib, Seaborn, D3.js, Tableau, Git, CI/CD

EXPERIENCE

Pediatric Brain Tumor Segmentation (BraTS-PEDs 2025 Challenge) **Jul 2025-Present**

Research Assistant *Los Angeles, California*
- Engineer preprocessing pipeline (PyTorch, TorchIO, SimpleITK) for 1,000+ MRI volumes with 95%+ consistency using N4 bias correction and Nyul standardization.
- Architect GPU-efficient models (DeepDenseTrans3D, GIETNet, ARES-UNet), boosting Dice score by 8% and formulated composite loss (AFTL, Boundary Loss, IoU, BCE), reducing false negatives by 15%.
- Optimize training with AMP, distributed data parallelism, and cosine schedulers, accelerating GPU runtime by 25% and producing lesion-wise metrics (DSC, NSD) for robust validation.
- Coordinate with teammates to adopt TorchIO and N4ITK for consistency, mentoring undergraduate researchers on the preprocessing pipeline, present results in weekly lab meetings, and initiate USCNextLS variants and preprocessing workflows.

Anvayaa Kin Care Pvt. Ltd. **Feb 2024-Jul 2024**

Backend and AI Developer Intern *Bangalore, Karnataka, India*
- Built Django + PostgreSQL backend for 300+ users on Firebase and partnered with clinical experts to design GPT-based LLM workflows, producing 200 dementia care activities in 9 languages and 1,600+ videos adopted by 500+ families.
- Automated CI/CD with Docker + Azure DevOps, cutting release cycles from several days to 2 hours, led rollout coordination with PMs and caregivers, and published app on Play Store and App Store (4.5 rating).
- Directed feature roadmap based on caregiver feedback and integrated data analytics to guide data-driven improvements.

Neurapses Technologies **May 2023-Jul 2023**

AI Intern *Pune, Maharashtra, India*
- Developed an AI-powered query engine integrating GPT models with MongoDB, proposing a framework for semantic search on UK work visa datasets, and teamed with peers to create prompts and document workflows.
- Constructed scalable ETL pipelines (Pandas, PyMongo) to ingest 100k+ records, improving query accuracy by 30%.
- Designed adaptive prompt templates (+20% factual consistency) and NLP-enabled H2O Wave dashboards for 3 pilot clients, liaising with PMs via demos to drive cross-functional adoption.

PROJECT

Se-ResNet: Eye Disease Classification Model
- Implemented hybrid Se-ResNet (ResNet + SE blocks) in PyTorch for OCT image classification.
- Achieved 96% accuracy on 84k scans, outperforming baseline ResNet by 6%.
- Enhanced preprocessing (Pillow) for noise robustness; applied CUDA acceleration, early stopping, and feature visualization.
- Presented paper at 2024 IEEE AIC Conference, collaborating with peers to refine research strategy.

Air Pollution Forecasting - $PM_{2.5}$ and PM_{10}
- Implemented LSTM and ARIMA models to forecast year-long $PM_{2.5}$ and PM_{10} on IMD Alipur data, achieving RMSE $\approx 15.9 \ \mu g/m^3$.
- Engineered temporal features and handled non-stationarity, raising long-horizon forecast correlation to ≈ 0.88 for $PM_{2.5}$.
- Applied dropout regularization and multivariate inputs in a reproducible Python pipeline, improving generalization across weather patterns by 15%, enabling extension to additional pollutants and cities.

CERTIFICATIONS

- NPTEL NOC: Deep Learning - IIT Ropar
- Google Generative Artificial Intelligence
- Microsoft PL-900