Akshath Raghav Ravikiran

765-404-8121 araviki@purdue.edu linkedin.com/in/akshathrr github.com/AkshathRaghav

Education

Purdue University **West Lafayette, IN || August 2022 – December 2025**

Bachelor of Science in Computer Engineering *GPA: 3.81*

Activities: Purdue E-Lab (Prof. Culurciello, Multi-Modal AI Research), Purdue CVES (Prof. Yung-Hsiang Lu, SWE Research)

Research Papers

Time-Driven Fire Risk Forecasting: Leveraging Historical Trends for Enhanced Seasonal Modeling

(*Jain, **Ravikiran**, et al.)* Outlined architecture for fire-risk-forecasting system achieving 90%+ accuracies vs. govt. forecasts.

Experience

TensorFlow Model Developer **August 2023 – Present**

Google ML X Purdue Duality Lab (Prof. James Davis, Purdue-ECE) *West Lafayette, IN*

- Re-engineering the state-of-the-art **MaskFormer** computer-vision model to publish into Google's **TensorFlow Model Garden** for codebase re-use by users globally, alongside optimal pre-trained weights.
- Conducted experiments on GPUs & TPUs to ensure layer precision across the meta-architecture and implemented functions to ensure data consistency through the dataloader. Working on the evaluation module, including the implementation of panoptic inference metrics for accurate model assessment.

Data Science Intern **March 2023 – July 2023**

Ambee (Climate Intelligence) *Bangalore, India*

- Built a global forest-fire forecasting system, from prototype to production, that remains integrated into Ambee's proprietary **API** dashboard. Developed modularized components implemented within an end-to-end **AWS** lifecycle (Spark, Glue, S3) ensuring tri-monthly forecast generation, complimented by robust **ETL pipelines** (Docker).
- Co-authored a white paper outlining unique strategies targeting historical Fire Weather Index, enhancing a **Boosted Multi-Target RF Regressor's** performance to surpass government forecasts (NIFC & CWFIS) in risk classification.

Data Science Lead **December 2022 – April 2023**

Lightning Wildfire Lab (Prof. Yuan Wang, Purdue-EAPS X NASA) *West Lafayette, IN*

- Supervised codebase development for short-term wildfire forecasting; Responsible for bundling netCDF data on the basis of spatio-temporal features to package into **LSTM**, **CNN** and **ConvLSTM** deep learning models.
- Automated API requests for large scale fire data collection from USGS and Copernicus; Developed scripts using **Xarray**, **GeoPandas** and **netCDF4** to process Landsat and GeoTIFF data from NASA/NOAA satellites.

Projects

Amazon OpenSearch Service *Jinja2, OpenSearchBenchmark, AWS EC2, Docker*

- Reworked the workload generation process within the **official macrobenchmarking framework**, enabling custom features for user-defined workloads. **Defined** documentation for creating performance benchmarks on hosted indices.
- Enhanced extraction efficiency (upto 41.65%) by deploying **multi-process** capabilities for simultaneous data retrieval from clusters, ensuring optimal **throughput** and accelerated performance.

AutoRecruit - HackHarvard '23 *Django, Modal, ElevenLabs, Deepgram, OpenCV2*

- Implemented a context-mapped knowledge graph (KG) using **NLP** to help an LLM dynamically generate interview questions and evaluate applicants while considering real-time context, simulating a human-centric interview experience.
- Fine-tuned an MLP for audio analysis and integrated **DeepFace** for emotion detection, deploying these through Modal. Integrated React and Django using WebSockets for real-time speech transcription with **Deepgram** & used **ElevenLabs** for streaming text responses.

genCollab - CalHacks '23 *Flask, Discord, OpenAI, Redis*

- Built genCollab to wrap around **Discord** for AI-assisted project collaboration, enabling automatic roadmap development and role-based task allocation, specifically for use within open-source servers to evolve community development.
- Engineered a end-to-end **RAG** pipeline on **Redis**-scraped data to ensure that Llama 2 generates code that's integratable into an evolving codebase; utilized a hierarchical memory system to enhance context gathering using tree-traversal.

Technical Skills

Languages: Python, C, Java, JavaScript, MATLAB, R, PostgreSQL
Frameworks: TensorFlow, PyTorch, Keras, Xarray, Matplotlib, GeoPandas, OpenCV2, ONNX, Django, Node.js
Tools: Linux, Docker, DVC, MLFlow, ZenML, Azure OpenAI, Redis, Elasticsearch, DynamoDB, AutoCAD
Cloud Utilities: Google Cloud Console (Compute), Amazon Web Services (ECS, S3, Lambda, Glue, Spark, Athena)