AKSHATH RAGHAV RAVIKIRAN

📞 765-404-8121　✉ araviki@purdue.edu　in linkedin.com/in/akshathrr　○ akshathraghav.github.io

Education

Purdue University　　　　　　　　　　　　　　　　**West Lafayette, IN || August 2022 − December 2025**
Bachelor of Science in Computer Engineering　　　　　　　　　　　　　　　　　　　　*GPA: 3.81*
<u>Honors:</u> *Eli Shay Electrical Engineering Scholarship (F'23 - S'24), Dean's List and Semester Honors (F'22 - S'24)*

Papers

V.Purohit, W.Jiang, **A.R.Ravikiran**, J.Davis. [A Partial Replication of MaskFormer in TensorFlow on TPUs for the TensorFlow Model Garden](#), arXiv Technical Report, 2024

R.Jain, **A.R.Ravikiran**, P.Katti. [Time-Driven Fire Risk Forecasting: Leveraging Historical Trends for Enhanced Seasonal Modeling](#), ResearchGate White Paper, 2023

Experience

TensorFlow Model Developer　　　　　　　　　　　　　　　　　　**August 2023 − Present**
Google X Purdue Duality Lab (Prof. James Davis, Purdue-ECE)　　　　　　　　　*West Lafayette, IN*
- Re-engineered the **[MaskFormer](#) model** to natively run on Google Cloud TPUs. Validated module-level precision on funded GPUs/TPUs; responsible for the PR to Model Garden from guideline compliance to documentating results.
- Engineered the **inference module**, including the PQ metrics implementation to work with TF 2.x's task flow. Integrated code for auxillary losses to address **inability of loss convergence**, and fixed run-time issues across computes.

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

GrammarFlow　　　　　　　　　　　　　　　　　　　*February 2024 - April 2024*
- [Published a package](#) to **ensure parseability** of LLM outputs into structured dataclasses, improving robustness of AI agents. Designed to address issues with LangChain on local LMs, GrammarFlow achieves parsing success of **99%+** across fine-tuned variants from **Llama, Mistral and Dolphin** on popular reasoning datasets.
- Introduced **GNBF grammar** generation to interface with efficient token sampling, incorporating regex patterns into decoding algorithms. Enables **complex use-cases**, including multi-grammar and nested sequence generation.

Reproducible AI Software (RAIS)　　　　　　　　　　　　　　　*January 2024 - May 2024*
- Awarded **"Outstanding Sophomore in VIP"** for directing efforts to practically evaluate AI/ML research reproducibility. **Categorized** reproducibility types and **quantified** reusability with a scoring system.
- Scrutinized SWE literature to identify trends and implemented scrapers to analyze over 3000 academic & corporate research projects for validating my [data-driven pipeline](#). Employed LLM chains integrated within repository file structures to assess structural cohesion, documentation, community engagement, and dataset accessibility.

Amazon OpenSearch Service　　　　　　　　　　　　　　*September 2023 - December 2023*
- 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.

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
Cloud Utilities: Google Cloud Console (Compute), Amazon Web Services (ECS, S3, Lambda, Glue, Spark, Athena)