HARISH BALAJI BOOMINATHAN

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PROFESSIONAL EXPERIENCE

GOOGLE SUMMER OF CODE - OPEN SOURCE CONTRIBUTOR **New York City, United States**
Organization: University of California, OSPO *Jun 2025 - Sep 2025*

- Designed advanced privacy metrics quantifying data re-identification risks across 10,000+ records (score: 0–1).
- Collaborated with 2 researcher scientists from **Lawrence Berkeley National Laboratory (LBNL)** and **Ohio State University** and enhanced AIDRIN, a tool that evaluates dataset readiness by assessing the 6 pillars of readiness.
- Expanded AIDRIN's data-readiness framework, supporting image datasets via embeddings for 1,000+ samples.
- Prototyped a RAG-based chatbot for real-time analytics, resulting in **92% satisfaction** among stakeholders.

NEW YORK UNIVERSITY **New York City, United States**
Graduate Research Assistant, VIDA Lab Jan 2025 - Jul 2025

- Engineered synchronization software integrating multimodal data from 12+ sensors at 3 Brooklyn intersections.
- Deployed **HRNet**-based pose estimation model tracking 1,000+ pedestrian trajectories at **95% accuracy**, enhancing traffic safety.

PROJECTS

EL SILENCIO ACOUSTIC EXPLORER

- Devised an audio-classification pipeline (RawAudioCNN, EfficientNetB3-LoRA) trained on 12.5GB dataset for bird-species detection.
- Achieved model compression by **85% (to 197.5MB)**, latency reduction to 23ms, and throughput increase by **385%**.
- Deployed optimized edge solution on Raspberry Pi 5 with live Prometheus/Grafana monitoring (75ms latency).
- Constructed a live **Prometheus + Grafana Dashboard** to monitor real-time performance metrics, supporting 8+ concurrent requests and sub-25ms latency.

ROUTEWISE

- Developed scalable route-optimization platform solving TSP for 20+ locations, reducing itinerary planning time by 85%.
- Engineered adaptive algorithm selection (**Greedy, DP, OR-Tools, genetic annealing**) ensuring optimal routes for up to 7 locations in $O(n^2)$.
- Reduced Google Maps API calls by 80% via intelligent caching; integrated real-time travel constraints and user preferences.

DAILYPOD

- Built automated podcast platform delivering personalized audio news summaries to 1,000+ daily active WhatsApp users.
- Implemented distributed task-processing using **Celery and Redis,** improving scalability and throughput by 3x.
- Leveraged GPT-3.5 summarization, achieving 95% deduplication; designed multi-language audio generation pipeline with 99% delivery success rate.

XGCHURN

- Developed **XGBoost** ML model predicting bank customer churn (87% accuracy, 85% ROC-AUC).
- Integrated **SHAP** explainability, identifying key churn indicators to enhance business insights.
- Created interactive **Streamlit** dashboard visualizing churn risks across 2,000+ customer profiles in real-time.

EDUCATION

NEW YORK UNIVERSITY **New York City, United States**
MS in Computer Engineering - GPA: 4.00 / 4.00 Sept 2024 - May 2026

- Collaborated in a team to fine-tune RoBERTa on 120K+ AG News articles using LoRA adapters, achieving 92%+ accuracy with just 0.5M trainable parameters
- Relevant Coursework : Machine Learning, Deep Learning, ML Systems Engineering and Operations, Applied Matrix Theory.

SASTRA UNIVERSITY **Thanjavur, India**
Bachelor of Technology in Computer Science and Engineering Aug 2020 - Jun 2024

- Relevant Coursework : Data Structures and Algorithms, Design and Analysis of Algorithms, Machine Learning, Operating Systems, Computer Networks, Database and management systems.

SKILLS

Languages / Frameworks / Tools: Python, C++, SQL, Bash, FastAPI, Docker, Kubernetes, Git, Prometheus, Grafana
Others: Data Structures & Algorithms, CI/CD, Cloud Infrastructure, Edge Computing, Privacy-Preserving ML, PyTorch, ONNX, MLflow, Streamlit, MLOps, Model Optimization