Harshith Mohan Kumar

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EDUCATION

University of California, Riverside **Master of Science, Computer Science** Jan 2025 (Expected)| Riverside, CA
GPA: 3.90 |Thesis: Multimodal Optical Flow for Burst Alignment | **Lab:** Computational Optics & Display Engineering

PES University **Bachelor of Technology, Computer Science** Aug 2019 - Jul 2023 | Bangalore, KA
GPA: 3.66 Specialization in Machine Intelligence and Data Science; Graduated First Class with Distinction

SKILLS

Languages: Python, C, C++, Java
Backend: Docker, AWS, Jupyter, GitHub, MongoDB
Systems: Linux, HPC, CUDA

ML/Stats: PyTorch, OpenCV, Numpy, Keras
Research: 3D Reconstruction, Perception, Transformers, Computational Optics, Multimodal Fusion

MACHINE LEARNING EXPERIENCE

INTEL Bangalore, India
Machine Learning Intern Jan 2023 – Jul 2023
- Designed novel semi-supervised learning framework using **PyTorch** to eliminate manual **object detection** labeling.
- Resulted in 20% improvement in model accuracy and research paper acceptance at **ICCV 2023** workshop.
- Developed proof of concept to grade severity of collision avoidance alerts enhancing fleet manager decision-making.

GOOGLE SUMMER OF CODE (Red Hen Labs) | Link Remote
Machine Learning Contributor Jun 2022 – Sep 2022
- Automated segmentation of old TV Broadcast recordings using **multi-modal** deep learning.
- Enabled 15x efficiency through multi-threading and array jobs on a largescale HPC GPU cluster.
- Conducted music segmentation, image segmentation, and RNN-DBSCAN clustering on 100+ TB data.

ENROLE INC. Remote
Data Science Intern Jun 2020 – Aug 2020
- Designed and integrated a clustering-based recommender system for a mobile-first application using **GCP** and **Scikit-Learn**.
- Packaged the code into an API and further integrated it into mobile apps using Flutter.

INDIAN INSTITUTE OF SCIENCE Bangalore, India
Summer Research Fellowship May 2021 – Jul 2021
- Researched Markov Chain-based **stochastic models** to reduce 802.11 WiFi router packet collisions, enhancing throughput.

RELEVANT PROJECTS

OCTraN: 3D Occupancy Convolutional Transformer Network in Unstructured Traffic Scenarios | Link
- Propose a novel transformer architecture that uses iterative attention to convert 2D image features into 3D occupancy.
- Presented paper at **CVPR 2023** Transformers for Vision Workshop.

Multivariate Covid-19 Forecasting with Vaccination as a factor: the case of India & USA | Link
- Utilized TensorFlow to investigate the effect of multivariate over univariate models.
- Presented at **ICML 2022** and published in **IEEE 2022**

RELEVANT PUBLICATIONS | Google Scholar

1. Fusing Pseudo Labels with Weak Supervision for Dynamic Traffic Scenarios | Link | **ICCV 2022 BRAVO Workshop**
2. GraphCoReg: Co-Training for Regression on Temporal Graphs | Link | **ECML-PKDD 2023 MLG Workshop** | *Best Paper*
3. Semi-Supervised Learning with In-domain Pre-training and Deep Co-Training | Link | **ICICCT Springer 2023**

LEADERSHIP EXPERIENCE

PES University Bangalore, India
Teaching Assistant Jun 2022 – Jul 2023
- Created course slides, practical python workbooks and automated labs for the *Data Analytics* and *Image Processing and Computer Vision* courses. Improved understanding of recommender systems and morphological processing for students.
- Developed and taught four-week curriculum for the course '*Introduction to Machine Learning*' and held a two-day workshop on '*Neural Networks from Scratch*' for 100 undergraduate students to encourage practical learning.