Arati Ganesh

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A Master's student in Electrical and Computer Engineering with 2+ years in Deep Learning, ML Performance Engineering, and Hardware Acceleration, seeking related internships.

Education

Georgia Institute of Technology, Atlanta Aug 2023 - May 2025
Master of Science, Electrical and Computer Engineering *GPA - 4.0/4.0*
Advanced Programming Techniques, Generative and Geometric Deep Learning, Random Processes, Machine Learning, Hardware and Software Codesign for ML, Deep Learning

BMS College Of Engineering, Bengaluru Aug 2017- July 2021
Bachelor of Engineering in Electrical and Electronics *GPA - 9.57/10*

Work Experience

Graduate Teaching Assistant - OMSCS 7643 Deep Learning , PHYS2212 Aug 2023 - Present
Georgia Institute of Technology, Atlanta
- Working on assisting students with concepts, grading and providing constructive feedback on assignments.

Machine Learning Engineer Jan 2022 - July 2023
Sony India Software Centre, Bengaluru
- Key contributor in developing and optimizing advanced object detection, image matting models and achieved a 10-15% improvement in model accuracy through strategic hyperparameter tuning.
- Developed a C++ based ALPR application for the iMX8 edge device, combining initial inference from an IMX500 AI camera with final inference on the device, fine-tuned for low-power efficiency using TensorFlow Lite and ONNX.
- Sped up model development cycles by the creating a benchmarking application to extract KPIs and improved inference and benchmarking speed by 20% through model caching.
- Integrated MLflow to streamline the ML workflow, resulting in reduction of deployment time in production.
- Engineered cloud app using AWS Lambda, S3, Batch, EC2; achieved 25% batch image processing improvement.
- Implemented post processing algorithms with CUDA, achieving ∼2X improvement in processing speed and accuracy.

Engineer Aug 2021 - July 2023
Ignitarium Technology Solutions, Bengaluru
- Implemented and evaluated various Computer Vision and Deep Learning algorithms (Efficient Pose, PnP) for accurate object pose estimation in retail shelf management by robots.
- Spearheaded the development of custom CUDA kernels for Deep Learning operations, enhancing computational efficiency by 40%, with targeted optimization and performance validation using Nsight Systems profiler.

Embedded Engineering Intern Feb 2021 – July 2021
Honeywell Technology Solutions, Bengaluru
- Engineered the firmware for ADuCM355-based Single Gas Detectors, enhancing device performance, complemented by design optimization through simulations on Mentor Graphics tool.

Robotics Intern Jul 2020 – Dec 2020
Robert Bosch Center for Cyber Physical Systems, Indian Institute of Science, Bengaluru
- Developed an IMU-based hand pose estimator for tele-robotic control, post studying various methods, and simulated a ROS tele-operated pick-and-place robot for enhanced control and manipulation. [Report]

Projects

Graph Neural Network Systems - Systems for AI Lab | *Pytorch Geometric, C++*
- Implementing asynchronous training of Graph Neural Networks (GNNs) on a full-graph basis enhances scalability and reduces convergence time compared to other existing GNN training frameworks.

Variational Autoencoders for Collaborative Filtering | *Pytorch, Data Preprocessing & Analysis*
- Developed a VAE-based recommendation system, improving accuracy with techniques like composite prior integration and beta annealing. [Report]

Multimodal Disease Classification - BioMIB lab | *Pytorch, Feature Engineering, Data Analysis*
- Contributed to a multimodal disease classification pipeline, integrating gene embeddings from GeneDAE and diverse modalities, with MLOps for experiment tracking and hyperparameter optimization.

Technical Skills

Languages: Python, C, C++, CUDA, Java, OpenMP, OpenMPI, OpenGL, Shell Scripting, MATLAB
Frameworks/Tools: PyTorch, TensorFlow, Scikit-Learn, Numpy, Matplotlib, ROS, AWS Cloud, Docker, Mlflow, Git
Hardware: STM32, i.MX8, Raspberry Pi, IMX500, ADUCM355, Arduino
Publications: Mobile Covid Santization Robot [Link]