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Laxman Kumarapu

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Education

Courant Institute of Mathematical Sciences, New York University — **New York, USA**
Master of Science in Computer Science; CGPA: **3.81/4.00** — September 2022 - May 2024
Relevant Coursework : Deep Learning by **Yann LeCun**, Computer Vision by **Rob Fergus**, Learning with Large Language and Vision Models by **Saining Xie**

Indian Institute of Information Technology, Sri City — **Sri City, India**
Bachelor of Technology in Computer Science; CGPA: **9.56/10**; **(Gold Medalist)** — August 2017 - May 2021
Relevant Coursework : Machine Learning, Artificial Intelligence, Advanced Statistical Methods

Technical Skills

Languages: Python, C, C++, MATLAB
Machine Learning Libraries/Frameworks: PyTorch, Tensorflow, Numpy, Pandas, ScikitLearn, Keras
Tools & Systems : GitHub, Docker, Kubernetes, GCP, AWS, MySQL, MongoDB
Areas of Experience: Computer Vision, Deep Learning, Natural Language Processing, Convolution Neural Network Architectures, Transformers, Large Language Models, Federated Learning, Generative Adversarial Networks

Professional Experience

Machine Learning Engineer — **January 2022 - August 2022**
Hammoq — Indore, India
- Developed an end-to-end pipeline for apparel classification using deep learning in PyTorch, by fine-tuning self-supervised networks like CLIP on custom datasets, achieving over 93% accuracy on real-world images.
- Pioneered an apparel measurement system by integrating camera calibration techniques in OpenCV with PyTorch-based keypoint detection models, ensuring an accuracy margin of +/- 0.3 inches.
- Collaborated with web and app development teams, integrating machine learning models leading to a significant 90% reduction in apparel measurement time compared to when done manually.
- Facilitated in the onboarding process, mentoring new team members on machine learning pipelines and fostering a knowledge-sharing environment.

Machine Learning Engineer — **October 2021 - December 2021**
ALOG TECH — Hyderabad, India
- Played a pivotal role in developing an interface for controlling robot fleet in warehouses via ROS software. Integrated AI-driven path optimization and multi-agent coordination algorithms, improving the order-picking efficiency by 3 times.

Machine Learning Engineer — **January 2021 - July 2021**
ALOG TECH — Hyderabad, India
- Spearheaded the creation of an autonomous image dataset labeling tool with a user-friendly web interface, employing few-shot object detection techniques in PyTorch. This tool reduced image annotation time by 60%.
- Designed the tool to automatically generate bounding box annotations from as few as 2-3 sample images per class, simplifying and accelerating the manual labeling process for annotators.

Machine Learning Intern — **April 2020 - August 2020**
ALOG TECH — Hyderabad, India
- Collaborated with the computer vision team in development of ALOG AIIM, a tool using computer vision and deep learning for autonomous product inspection and inventory management.
- Integrated a multitude of deep learning strategies, from classification to object detection, and performed feature engineering tasks, including color space transformations.
- Optimized ALOG AIIM for performance on Intel processors, leading to a 50% reduction in inference times and subsequent feature on the “Intel Global AI Solutions” portal.
- Link to Project’s feature on Intel’s website: https://www.intel.com/content/www/us/en/internet-of-things/ai-in-production/partners/alog-tech.html .

Research Publications and Projects (open-sourced and provided GitHub links)

Animepose: Multi-person 3D Pose Estimation and Animation — **GitHub Repo Link**
- Developed a deep learning pipeline to convert 2D videos into 3D multi-person animations using object detection and depth estimation techniques. Featured in Pattern Recognition Letters, Elsevier 2021.
- Publication Link: https://doi.org/10.1016/j.patrec.2021.03.028

Efficient High-Resolution Image-to-Image Translation using Multi-Scale Gradient U-Net — **GitHub Repo Link**
- Pioneered a GAN optimized for high-resolution image translation, surpassing models such as Pix2PixHD in efficiency by 2.5x, highlighting the potential for diverse real-world translation tasks. Recognized and accepted at the esteemed CVIP 2021.
- Publication Link: https://doi.org/10.1007/978-3-031-11346-8_4

Star Discriminator Federated Learning GAN — **GitHub Repo Link**
- Pioneered a novel federated learning approach for GANs that leverages a distributed training strategy across devices, ensuring decentralized training of GANs without the need for direct data sharing, preserving data privacy.