KAUSTUBH HARAPANAHALLI

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EDUCATION

Masters in Computer Science — Graduating Dec 2024
Arizona State University, Tempe, AZ — 3.75 GPA

Bachelors in Electronics and Communication — Graduating Jun 2018
Visveswaraya Technological University, India — 62.46%

TECHNICAL SKILLS

Programming: Python, C++
Technologies and Frameworks: PyTorch, Tensorflow, Docker, Git, AWS

PUBLICATIONS

Sai Shashank Peddiraju, **Kaustubh Harapanahalli**, Edward Andert and Aviral Shrivastava, "*IncidentNet: Traffic Incident Detection, Localization and Severity Estimation with Sparse Sensing*" at 2024 IEEE 27th International Conference on Intelligent Transporation Systems (ITSC), 2024. [link]

PROFESSIONAL EXPERIENCE

Artificial Intelligence and Computer Vision Intern — Jun '23 - Jan '24
Siemens Technology, Tempe, AZ

- Developed an innovative **Patch Augmentation** library enhancing anomaly detection capabilities in computer vision models where the defect size is minuscule compared to image size, utilizing randomized and bounding-box aware patch extraction.
- Implemented and analyzed the impact of patch augmentation on model generalization, significantly improving detection accuracies with a **99.674%** training accuracy in image classification using ResNet18 and a **99.23%** mAP in object detection with YOLOv5.
- Integrated a PostgreSQL database schema using SQLAlchemy and FastAPI endpoints for dynamic model serving with a website for real-time anomaly detection in manufacturing processes.

Research Engineer — Aug '19 - Jun '22
Siemens Technology, Bengaluru, India

- Designed Active Learning strategies for 2D object detection (**40%** reduction in number of images required for model training, annotation cost savings of **20%**, **15%** reduction in manual effort for annotation verification). The solution was converted into a Python package for easy integration with PyTorch and TensorFlow.
- Formulated a framework for *rapid prototyping and developing computer vision solutions for industrial AI solutions*. The framework reduced more than **40%** of manual effort on developing prototypes.
- Developed an automation tool for processing and generating global coordinates for railway use-cases using Airflow, resulting in **75%-time reduction**, manual intervention down from **8 to 3 days**.
- Designed and shaped a tool for tracking multiple model iterations executed for a particular project, providing the benefit of having all the model versions and dataset versions along with the utilized data labels to be tracked.

Program Manager — Jul '18 - May '19
Speckbit Exploratories, Bengaluru, India

- Architected the *Machine Learning Foundation* track launch, an exclusive program focused on *introducing Data Science & Machine Learning* at the Bridge Student Accelerator Program.
- Successfully conducted the Machine Learning Foundation track with 95% completion rates over multiple batches.
- Coached 300+ undergraduate students to enter the domain of Machine Learning & Data Science.
- Designed & authored comprehensive content for the Hacking Data Science track.

PROJECTS

Dawn Bench Competition by Stanford: Personal Project — Winter '19
Trained a model using Custom Network based on Resnet architecture to reduce the time-to-cost ratio for training a model on the CIFAR 10 dataset using a V100 GPU with a validation accuracy of 92% in 140 seconds

Human Activity Recognition using Pose Estimations: Academic Project Winter ’17 - Summer ’18
Trained a model using Custom Network based on Resnet architecture to reduce time to cost ratio for training a model on CIFAR 10 dataset using a V100 GPU with a validation accuracy of 92% in 140 seconds