SUREN SRITHARAN

suren.sritharan@tum.de | suren3141.github.io | linkedin.com/in/suren3141/

EXPERIENCE

Working student - AstraZeneca Computational Pathology, Germany May 2023 - Aug 2024
Python*, *Pytorch*, *Tensorflow*, *EC2*, *SageMaker*, *Ray-Tune
- Generated synthetic histopathological images using conditional diffusion models and zero-shot appearance transfer.
- Improved the performance of downstream segmentation task (F1 score) by **+20%** for small-scale datasets and up to **+2%** for large-scale data using in-silico data.

Student Research Assistant - Technical University of Munich, Germany Dec 2021 - March 2023
Python*, *Pytorch*, *ROS2*, *Carla
- Providentia++ : Estimated the 3D position of vehicles from monocular images taken from infrastructure cameras through semantic segmentation and pose estimation + tracking through coordinate transformation to BEV. Improved the mAP by **+1.62** over SOTA through late fusion developed based on the monocular detector.
- DAML lab: Conducted a study on bayesian processes and uncertainty estimation in Graph Neural Networks.

AI Researcher Assistant - SLTC, Sri Lanka Aug 2020 - Sep 2021
Python*, *tensorflow
- Proposed a cyclic-GAN-based model for Intrinsic image decomposition (IID) and image enhancement enhancement trained with both paired and unpaired images, which provides near-SOTA efficacy and higher efficiency.

Autonomous wireless network research intern - Nokia Bell Labs, Belgium Feb 2019 - Aug 2019
C++*, *Tensorflow
- Studied the limitations of machine learning models for wireless 5G networks and beyond.
- Investigated the applicability and limitation of supervised, unsupervised, and reinforcement learning techniques for resource allocation in wireless applications.

EDUCATION

M.Sc. Informatics (Computer Science) Oct 2021 - Aug 2024
Technical University of Munich *GPA : 1.1*

B.Sc. Engineering (Computer Engineering) Jan 2016 - July 2020
University of Peradeniya *GPA : 4.0/4.0*

TECHNICAL SKILLS

- **Programming Languages**: Python, Java, C, C++, R
- **ML Tools & Services**: PyTorch, TensorFlow, MLflow, ZenML, Wandb , SageMaker, Ray-Tune
- **OS & Tools**: Linux, Git, GCP, AWS, Docker, Kubernetes, GitHub Actions, Terraform, Jira, Scrum
- **Other tools and Technologies**: Open3D, ROS2, Carla Simulator, MySQL

SELECTED PROJECTS

Cooperative perception through deep fusion for autonomous driving applications 2023
Python*, *Pytorch*, *ROS2*, *Open3D
- 3D object detection through multimodal (LiDAR, camera) multiview (road-side, vehicular) sensor fusion.
- The proposed cooperative approach based on a transformer-based deep fusion model leads to a **+6.2** mAP increase compared to vehicular perception.

Anomaly detection during production process through images 2022
Python*, *Pytorch*, *Optuna
- Created an efficient ML pipeline using PyTorch to detect anomalies at the image and pixel levels with a recall rate of **97%**. This has been successfully deployed at Siemens GWE to identify the anomalies in images captured during the production process of heat sinks.
- Performed hyper-parameter tuning through Optuna and WandB, and deployment + testing using ZenML.

Crowd risk assessment through CCTV to combat COVID-19 spread in Sri Lanka 2021
Python*, *Tensorflow
- Proposed vision and graph based model to assess the COVID-spreading risk levels from CCTV camera videos to develop spread mitigation strategies for different environments.
- Performed feature extraction using social distance measure, contact detection, mask identification, and prediction through a temporal graph network with compression, heuristic pruning, and lazy updates pruning for optimized efficiency.

Infant sleep apnea detection 2018
Python*, *HTML*, *CSS*, *Javascript*, *MQTT
- Vision-based system on Arduino for detection of sleep apnea in infants.