Sandeep N Menon

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Experience

Deep Learning Intern, Perception | Kodiak Robotics | **Mountain View, California**   **May – Sept 2023**
- Engineered a multi-modal deep learning architecture integrating Camera, Lidar, and Radar sensory data for ground height, lane, and obstacle estimation.

Deep Learning Research Engineer | Deepen AI | **Hyderabad, India**   **Sept 2020 – Jul 2022**
- Developed a 3D PointNet model for temporal smoothing of segmentation predictions over point cloud sequences, achieving a 20% mIoU improvement.
- Built a Sparse Point-Voxel CNN model for semantic segmentation of 3D point cloud sequences, boosting data annotation speed by 30% and obtaining a 76% mIoU score.
- Implemented object-aware anchor-free tracking for 2D visual object tracking
- Devised a targetless Camera-IMU and stereo camera calibration algorithm, reducing calibration time by 90% and achieving a 1-degree error margin.
- Created an on-demand GPU Virtual Machine allocation system saving up to 4000 USD/month for the company

Software Development Engineer II | Microsoft | **Hyderabad, India**   **Jun 2018 – Sept 2020**
- Co-authored new Machine Learning method inspired by Random Forests to identify similar won deals and opportunities for sales executives in Relationship Analytics in Dynamics 365; **received patent award**
- Shipped Dynamics 365 sales insights connector in Power platforms managing 9 million monthly requests

Projects

Video frame prediction and collision modeling using Deep Learning | *PyTorch, WandB*   **Mar - May 2023**
- Used self-supervision techniques with the SimVP model for future segmentation prediction in videos, winning 1st place in Prof. Yann LeCun's and Prof. Alfredo Canziani's Deep Learning class at NYU.
- Innovated a New Object Suppression (NOS) decision tree-based technique to rectify prediction errors.

Federated Training System for Generative Adversarial Networks | *PyTorch, Flower*   **Oct - Dec 2022**
- Designed a federated learning system to train Generative Adversarial Networks. GAN can be trained across dozens of devices without sharing their data

Point Cloud Oversegmentation using Superpoint Graphs | *PyTorch, Boost*   **May - Jun 2021**
- Adapted Superpoint Graph implementation to Argoverse point cloud dataset to achieve over-segmentation results of overall accuracy of 96% and Boundary Recall of 92%

Asymmetric 3D Convolutions in Torchsparse | *PyTorch*   **Feb 2021**
- Contributed Asymmetric 3D Convolutions implementation to TorchSparse library, managed by MIT HAN Lab

Removing noise from Optical Coherence Tomography (OCT) Images [CVIP 2020]   **Aug 2017 - May 2018**
- Achieved Structural Similarity Index (SSIM) value of 96.7% for low noise images and 91.2% for high noise images, surpassing the state-of-the-art results at the time of publishing

Education

New York University (NYU) Courant Institute of Mathematical Sciences   **2022 – 2024**
Master of Science in Computer Science

National Institute of Technology Karnataka, Surathkal, India (NITK)   **2014 – 2018**
Bachelor of Technology in Computer Science

Technical Skills

Deep Learning (PyTorch, TensorFlow, Keras, MMDet, PointNet, CNN, VAE, GAN),
Convex Optimization (CVXPY, Ceres), **Computer Vision** (LiDAR, SLAM, Multi-Sensor Calibration and Fusion),
Languages/Platforms: C++, C#, Python, JavaScript, TypeScript, OCamL, React, Redux, Django, LangChain, Flower, Bazel, Docker, Azure, ROS, ClearML, WandB, Google Cloud, MongoDB, RocksDB, MySQL, Git