Sandeep N Menon

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Education

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

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

Industry Experience

Deep Learning Research Engineer | **Deepen AI** | **Hyderabad, India** **Sept 2020 – Jul 2022**

- Developed 3D PointNet model that performs temporal smoothing of segmentation predictions over point cloud sequences, improving mean Intersection over Union (mIoU) by 20%.
- Built Sparse Point-Voxel CNN model for semantic segmentation of 3D point cloud sequences. Improved data annotation speed by 30% against manual annotation; achieved 76% mIoU score.
- Implemented object-aware anchor-free tracking for 2D visual object tracking.
- Devised algorithm for targetless Camera-IMU and stereo camera calibration. Calibration time reduced by 90% and reached 1° degree error compated to target-based approaches
- Created an on-demand GPU Virtual Machine allocation system using Azure. Enabled automatic allocation and de-allocation of expensive GPU machines, thereby saving up to 2000 USD per 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**.
- Developed GDPR query handling service for email insights infrastructure that handles 1 million daily requests.
- Shipped Dynamics 365 sales insights connector to all Microsoft Power platforms that manage more than 9 million monthly service requests.

Selected Publications and Projects

Removing noise from Optical Coherence Tomography (OCT) Images [published] **Aug 2017 - May 2018**

- **Sandeep N Menon**, VB Vineeth Reddy, A Yeshwanth, BN Anoop, and Jeny Rajan. In *Proceedings of 3rd International Conference on Computer Vision and Image Processing*, pages 115–126. Springer, Singapore, 2020
- 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.

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%.

Online calibration of Surround-view Camera system | *OpenCV, Sophus, Boost* **Apr - May 2021**

- Online calibration of the four surround-view camera systems by minimizing photometric loss in the overlapping regions of the bird-eye view. Made Calibration possible with just one snapshot from the four cameras.

Asymmetric 3D Convolutions in Torchsparse | *PyTorch* **Feb 2021**

- Contributed Asymmetric 3D Convolutions implementation for the open source repository TorchSparse, managed by MIT HAN Lab

Virtual Gym Trainer | *PyTorch, Azure, OpenCV, Pose Estimation, PoseNet* | Demo link **May - Jun 2019**

- Platform for guiding users through trainer-specified exercises using automatic audio and visual cues.

Technical Skills

Deep Learning (PyTorch, TensorFlow, Keras, MMDet, CNN, VAE, GAN), **Convex Optimization** (CVXPY), **Computer Vision** (LiDAR, SLAM, Multi-Sensor Calibration and Fusion), **Languages/Platforms**: C++, C#, Python, Go, JavaScript, React, Docker, Azure, Google Cloud, MongoDB, RocksDB, MySQL