Panini Bhamidipati

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Education

University of California San Diego — San Diego, USA
Master of Science in Computer Science and Engineering — Sep 2022–May 2024

Indian Institute of Technology, Madras — Chennai, India
Bachelors in Engineering Design with an integrated Masters in Robotics — Aug 2017–May 2022
CGPA: 9.01/10 (Class rank 2 out of 30 students)

Experience

Carnegie Mellon University — Pittsburgh, USA
AirLab, Research Internship — Aug 2021 –Feb 2022

- Worked on building learning Based Visual Odometry system with Adaptive Memory for autonomous navigation.
- Developed a novel adaptive memory strategy with Spatio-Temporal Attention mechanism that helps to generalize the model across datasets. This model was trained and tested on TartanAir and KITTI datasets.

Robert Bosch Center for Cyber-Physical Systems — Bengaluru, India
ARTPARK, Indian Institute of Sciences, Research Assistant — Dec 2020 –May 2021

- Worked on autonomous emergency parking using visual odometry by performing real time semantic segmentation of road using Shelf-net.
- Improved the accuracy of landmark-based maps and performed continuous pose estimation by fusing landmark-based data with proprioceptive sensor data using Extended Kalman Filter.

LV Prasad Eye Institute — Hyderabad, India
Techsophy, Research Internship — Dec 2019 –May 2020

- Worked on early detection of Keratoconus (eye disorder) using deep learning and computer vision techniques on CT scans of patients. This work led to a publication in European Journal of Ophthalmology - 2022. (Paper)
- Developed algorithms for Tumor and seed detection using CT scans of patients suffering from Retinoblastoma (eye cancer). Used object detection and image segmentation based techniques.

Adobe — Bengaluru, India
Machine Learning Internship — May 2019 –July 2019

- Predicted the cloud storage requirement of Adobe's enterprises using deep learning.
- This problem of cloud storage prediction was formulated as a time series problem. Implemented multiple statistical and deep learning based approaches, and the best results were given by 2- Layer LSTM with an RMSE value of 0.028 followed by ARIMA with an RMSE value of 0.031

Projects

Text based video generation using Diffusion models — UC San Diego
Prof. Rose Yu, Course Project — Sep 2022 –Dec 2022

- Used Diffusion Models to generate realistic videos of a human moving given a text prompt and the initial image. Developed models to learn constrained human dynamics and generated temporally coherent video sequences. (Poster)

6D Pose estimation using Point Clouds — UC San Diego
Prof. Hao Su, Course Project — Sep 2022 –Dec 2022

- Performed semantic segmentation and used ICP algorithm and PointNet++ to estimate the pose of objects in the scene.

Ultimate Tic-Tac-Toe — Indian Institute of Technology, Madras
Deep Learning Course Project — Jun 2021 –Jul 2022

- Developed a Tic-Tac-Toe playing bot using alpha beta heuristic search and minimax algorithm using Python.

Publications

- Jagadeesh Reddy, Panini Bhamidipati, Shivam Dwivedi, Krishna Kishore Dhara, Vineet Joshi, Hasnat Ali. KEDOP: Keratoconus early detection of progression using tomography images, European Journal of Ophthalmology-2021.
- Shruteesh Iyer, Varghese Kuruvilla, Panini Bhamidipati, Raghu Krishnapuram Deep-Feature-based Visual Odometry for Autonomous Emergency Parking-2021

Technical Skills

- **Languages:** C, Python, C++, MATLAB, Java
- **Softwares:** Robot Operating System (ROS), OpenCV, Open3D
- **Packages and Libraries:** PyTorch, TensorFlow, Scikit-learn, Pandas
- **Courses:** Deep Generative Models, Deep Learning for 3D Vision, Computer Vision, Introduction to Robotics, Algorithms

Scholarships and Awards

- SAMSUNG–IIT M Pravartak Undergraduate Fellowship. 2021
- Semifinalist in the Flipkart Autonomous Stair Climbing Robot Challenge among 6000+ participants. 2020
- Runner up in the techsoc Payload Drone delivery Challenge conducted by IIT Madras. 2019
- Certificate from Asia Book of Records for Cleaning Robots Challenge. 2018