Animesh Sunil Dhagat

adhagat@andrew.cmu.edu | 412-500-1236 | linkedin.com/in/animesh-dhagat/

EDUCATION

Carnegie Mellon University (CMU) Pittsburgh, PA
Master of Science in Mechanical Engineering (Research) GPA: 3.5/4.00 May 2020
Coursework: Machine Learning; Computer Vision; Deep Learning; Graphics with OpenGL; Linear Systems,
Visual Learning and Recognition* *Spring 2020

Manipal Institute of Technology (MIT), Manipal University Karnataka, India
Bachelor of Technology in Mechanical Engineering GPA: 9.16/10.00 June 2018

SKILLS

Programming Languages: Python, C++
Libraries: PyTorch, Tensorflow, OpenCV, OpenGL
Application Software: MATLAB, Git

RESEARCH EXPERIENCE

Carnegie Mellon University – Robotics Institute Pittsburgh, PA
Graduate Research Assistant at Biorobotics Lab Aug 2018–Present
Applications: Object classification, Semantic segmentation, Pose estimation from Lidar point clouds.

Point Cloud Registration (alignment of 3D objects) with Neural Network (completed work)
Arxiv Preprint: *One framework to Register them all: PointNet encoding for point cloud alignment*
- Performed benchmark tests on several existing registration methods to compare their performance with our proposed framework for registration.
- Collected and organized performance results of the proposed framework on full-, partial-, and sparse-point cloud registration into a final submission.

Deep Learning based (3D) Point Cloud classification
- Explored representation of 3D data in high dimensional latent space using a Hilbert Curve encoding for classification tasks on the ModelNet40 dataset.
- Decoded the encodings to a 2-Dimensional space of pixels and extracted features using 2D Convolutions.

Indian Institute of Technology (IIT-B) Mumbai, India
Undergraduate Researcher – Computational Fluid Dynamics (CFD) Jan–July 2018

COURSE PROJECTS - CMU

6 DOF object pose from voxelized point clouds (PyTorch, Python) Aug–Dec 2019
- Devised a feature extraction method to preserve local geometric information from a voxelized point cloud.
- Feature extraction performed over voxels through 3D Convolutions to preserve spatial properties. Optimization set up as Minimization of frobenius norm distance between predicted pose and ground truth pose, and final pose prediction regressed to using fully connected layers.
- Achieved 83% pose accuracy and reduced density of point clouds (through voxelization) by almost 20%.

Tracking objects in images by Correlation Filters (Python, OpenCV) Aug–Dec 2019
- Implemented a correlation filter for real-time object tracking and compared performance with a naïve Lucas-Kanade tracker on parameters of frame rate and tracking results.
- Successfully observed enhanced performance of correlation filter tracker due to the absence of time intensive gradient computation steps, thus enabling it to work at higher frame rates.

The Koch Snowflake – A recursive propagation (C++, OpenGL) Aug–Dec 2018
- Formulated recursion to generate a fractal (self-repeating structure) using C++ and rendering with OpenGL.

INTERNSHIP EXPERIENCE

Biorobotics Lab & Biomedical Image Guidance Lab – CMU Pittsburgh, PA
Segmenting veins from Ultrasound Images. (US Dept. of Defence Sponsored Project) May–Aug 2019
- Tracked veins using Correlation Filter in real-time.
- Implemented threshold-based segmentation.

Tata Advanced Systems Ltd Hyderabad, India
Summer Intern, Production Department(Sikorsky S-92 helicopter) May–July 2016