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 based Registration with Deep Learning (completed work)
- Performed benchmark tests on several registration methods.
- Compared and contrasted their performance to our approach.
- Collated results for full-, partial-, and sparse-point cloud registration.
  Arxiv Preprint: ***One framework to Register them all: PointNet encoding for point cloud alignment***

Deep Learning based Point Cloud classification
- Explored representation of 3D data in high dimensional latent space using a Hilbert Curve encoding.
- Decoded this to a 2-Dimensional space of pixels and extracted features using 2D Convolutions.
- Tested classification, registration on this representation.

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

COURSE PROJECTS

6 DOF object pose from voxelized point clouds. (PyTorch, Python) Aug–Dec 2019
- Devised a feature extraction method using 3D-Convolutions.
- Exploited local geometric information while extracting features.
- Achieved 83% pose accuracy and reduced information dependency by almost 20%.
- Drawback: Voxelization in real-time is computationally expensive

Tracking objects in images by Correlation Filters. (Python, OpenCV) Aug–Dec 2019
- Implemented a correlation filter for real-time object tracking.
- Compared performance with a naïve Lucas-Kanade tracker.

The Koch Snowflake – A recursive propagation. (C++, OpenGL) Aug–Dec 2018
- Formulated recursion to generate a fractal (self-repeating structure).
- C++ implementation and rendering in 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
- Tracking veins using Correlation Filters in real-time.
- Implemented threshold-based segmentation and rendering.

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