

Pranav Kadam

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EDUCATION

University of Southern California

Doctor of Philosophy (PhD), Electrical Engineering Advisor – C.-C. Jay Kuo

Aug. 2020–May 2023 (expected)

Los Angeles, CA

Research focus – 3D point cloud processing and analysis

University of Southern California

Master of Science (Honors), Electrical Engineering GPA – 3.91

Aug. 2018–May 2020

Los Angeles, CA

Relevant coursework – Computer Vision, Machine Learning, Deep Learning, Algorithms, Robotics

Savitribai Phule Pune University

Bachelor of Engineering, Electronics and Telecommunication GPA – 3.90

Aug. 2014–May 2018

Pune, India

RESEARCH EXPERIENCE

USC Media Communications Lab

May 2019–present

Research Assistant

Los Angeles, CA

- Collaborated in research and development of unsupervised and feedforward feature learning method for 3D point clouds.
- Proposed SPA and R-PointHop methods for unsupervised point cloud registration of indoor scenes and CAD models.
- Modified R-PointHop for LiDAR odometry and object pose estimation.

Inter University Center for Astronomy and Astrophysics (IUCAA)

Sep. 2017–Mar. 2018

Research Intern

Pune, India

- Analyzed satellite time series data and assisted in development of algorithm to detect Gamma Ray Bursts (GRBs).
- Compared and applied Hidden Markov Models, Principal Components Analysis, and Friends of Friends clustering for anomaly detection.

PROJECTS

Structure from Motion (SfM) for 3D reconstruction | Python, OpenCV

- Reconstructed 3D point clouds of historic structures from pairs of images.
- Performed keypoint matching using SIFT and kNN, pose estimation from essential matrix and SVD, and triangulation.

Classification of quality of white wine | Python, Scikit-learn

- Predicted quality of white wine as good, medium, or bad using feature engineering and classification from 11 features.
- Trained machine learning algorithms such as SVM, Naive Bayes, Random Forest, MLP and kNN.

Region based Photorealistic Image Style Transfer | Python, PyTorch

- Trained PSPNet on MIT ADE20K dataset for semantic segmentation of content and style images.
- Implemented segment-wise image stylization using Whitening and Coloring transform.

Emotion detection from face images | Python, Keras, OpenCV

- Classified human emotions into eight categories by leveraging different CNNs and compared performance.

TECHNICAL SKILLS

Languages – Python, C++, Matlab, LaTeX

Libraries – PyTorch, OpenCV, Open3D, PCL, Scikit-learn

Certifications – Deep Learning Specialization, Coursera

SELECTED PUBLICATIONS

- 3D Point Cloud Analysis: Traditional, Deep Learning and Explainable Machine Learning Methods. *Springer* [Book]
- GPCO: An Unsupervised Green Point Cloud Odometry Method. *arXiv preprint arXiv:2112.04054*. [Paper]
- R-PointHop: A Green, Accurate and Unsupervised Point Cloud Registration Method. *IEEE TIP, 2022* [Paper]
- Unsupervised Point Cloud Registration via Salient Points Analysis (SPA). *IEEE VCIP, 2020* [Paper]

ACHIEVEMENTS AND SERVICE

Awards – Masters Honors Fellowship, Best Project in Deep Learning

Teaching Assistant – Linear Algebra (Fall'21)

Grader – Image Processing (Spring'20), Random Processes (Spring'20), Communication Systems (Fall'19)

Reviewer – ISPRS Journal of Photogrammetry and Remote Sensing