

Min Zhang

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Education

University of Southern California (USC) | Awarded Certificate in MS Honors Program Aug. 2017 - Present

- *Master of Science*, Electrical Engineering GPA: 3.96/4.00 Aug. 2017 - May. 2019
 - *Doctor of Philosophy*, Electrical Engineering Supervisor: C. -C. Jay Kuo Aug. 2019 – Present
- Relevant coursework: Image Processing, Computer Vision, Deep Learning, Machine Learning, Data Mining, Optimization

Nanjing University of Science and Technology (NUST) | China National scholarships twice (Too 1%) Aug. 2013 - Jun. 2017

- *Bachelor of Science*, Applied Physics GPA: 3.70/4.00 Ranking: 1/67

Work Experience

USC ECE Teaching Assistant | Graduate Level Jan. 2020 – May. 2021

- Designed homework and solutions, held office hours, taught discussion session for three courses: EE 569 Introduction to Digital Image Processing (Spring 2020), EE 660 Machine Learning from Signals: Foundations and Methods (Fall 2020) and EE 559 Mathematical Pattern Recognition (Spring 2021)

USC Media Communications Lab Summer Research Intern Jun. 2018 – Oct. 2018

- Proposed a new interpretable FF CNN design methodology which derives network parameters in one pass
- Tested on MNIST and CIFAR10 datasets, obtained good performance and robust to adversarial attacks
- Co-authored a paper which was published in *Journal of Visual Communication and Image Representation*, 2019.

Project Experience

Unsupervised Lightweight Point Cloud Classification and Segmentation | Project Leader Feb. 2019 – Feb. 2020

- Designed an explainable machine learning method called PointHop for unsupervised point cloud classification, and an enhanced lightweight version called PointHop++ by reducing model complexity as well as improving performance, which is on par with deep learning works on ModelNet40 dataset while requiring much less computation cost.
- Proposed an unsupervised feedforward feature learning scheme for joint classification and segmentation in an encoder-decoder manner, learning both shape and point feature in one-pass. Achieved good results on the ShapeNet part dataset.

Green, Accurate and Unsupervised Point Cloud Registration Feb. 2020 – Feb. 2021

- Collaborated in designing an unsupervised learning method for 3D point cloud registration and its enhanced version R-PointHop which learns rotation invariant point features, obtaining SOTA results.

Fast 3D Object Detection | Project Leader Aug. 2020 – Dec. 2020

- Completed a course project on fast 3D object detection which analyzes the factors that affect speed and performance of popular point-based deep learning networks, providing qualitative and quantitative results on the KITTI dataset

Selected Publications

- Pranav Kadam, **Min Zhang**, etc. [R-PointHop: A Green, Accurate and Unsupervised Point Cloud Registration Method](#). *IEEE Transactions on Image Processing*, submitted.
- **Min Zhang**, Pranav Kadam, etc. [Unsupervised Feedforward Feature \(UFF\) Learning for Point Cloud Classification and Segmentation](#). *IEEE International Conference on Visual Communications and Image Processing (VCIP)*, 2020.
- **Min Zhang**, Pranav Kadam, etc. [PointHop++: A Lightweight Learning Model on Point Sets for 3D Classification](#). *IEEE International Conference on Image Processing (ICIP)*, 2020.
- **Min Zhang**, Haoxuan You, etc. [PointHop: An Explainable Machine Learning Method for Point Cloud Classification](#)[J]. *IEEE Transactions on Multimedia*, 2020, 22 (7), 1744-1755.
- C.-C. Jay Kuo, **Min Zhang**, etc. [Interpretable Convolutional Neural Networks via Feedforward Design](#)[J]. *Journal of Visual Communication and Image Representation*, 2019, 60: 346-359.

Skills & Others

- Computer Languages: Excellent in Python, LINUX, LATEX, Proficient in C++
- Libraries: Sci-kit Learn, Pytorch, Open3D, Spark, PCL