



THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Machine Learning and Statistics Seminar

on Thursday, Jan 21, 2021
at 18:00

<https://weizmann.zoom.us/j/93960308443?pwd=b1BWMkZURjZ0THMxUisrSFpMaHNXdz09>

Or Litany
NVIDIA's Toronto AI lab

Learning on Pointclouds for 3D Scene Understanding

Abstract:

In this talk i'll be covering several works in the topic of 3D deep learning on pointclouds for scene understanding tasks.

First, I'll describe VoteNet (ICCV 2019, best paper nomination): a method for object detection from 3D pointclouds input, inspired by the classical generalized Hough voting technique. I'll then explain how we integrated image information into the voting scheme to further boost 3D detection (ImVoteNet, CVPR 2020). In the second part of my talk I'll describe recent studies focusing on reducing supervision for 3D scene understanding tasks, including PointContrast -- a self-supervised representation learning framework for 3D pointclouds (ECCV 2020). Our findings in PointContrast are extremely encouraging: using a unified triplet of architecture, source dataset, and contrastive loss for pre-training, we achieve improvement over recent best results in segmentation and detection across 6 different benchmarks for indoor and outdoor, real and synthetic datasets -- demonstrating that the learned representation can generalize across domains.

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