מכון ויצמן למדע

THE WEIZMANN INSTITUTE OF SCIENCE

FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Machine Learning and Statistics Seminar

on Wednesday, Jan 27, 2021
at 14:00

https://weizmann.zoom.us/j/98859805667?pwd=dCthazViNFM1Y2FFeCtIcitORUR3Zz09

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Deep Learning on Structured and Geometric Data

Abstract:

Deep Learning of structured and geometric data, such as sets, graphs, and surfaces, is a prominent research direction that has received considerable attention in the last few years. Given a learning task that involves structured data, the main challenge is identifying suitable neural network architectures and understanding their theoretical and practical tradeoffs.

This talk will focus on a popular learning setup where the learning task is invariant to a group of transformations of the input data. This setup is relevant to many popular learning tasks and data types. In the first part of the talk, I will present a general framework for designing neural network architectures based on layers that respect these transformations. In particular, I will show that these layers can be implemented using parameter-sharing schemes induced by the group. In the second part of the talk, I will demonstrate the frameworkâ□□s applicability by presenting novel neural network architectures for two widely used data types: graphs and sets. I will also show that these architectures have desirable theoretical properties and that they perform well in practice.

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