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Samuel Horvath

Mohamed bin Zayed University of Artificial Intelligence (MBZUAI)

Nov. 26th, 2024
starting at 10:00 AM
Vandal Lab, Covivio
Corso Ferrucci 112 - Turin, Italy

Trainable Decomposition: Addressing Device Heterogeneity and Model Size

This talk introduces Ordered Dropout, a mechanism for nested knowledge representation in deep neural networks, enabling the extraction of smaller submodels without retraining. It then highlights FjORD, a federated learning framework that adapts model width to diverse client capabilities using Ordered Dropout. Finally, the talk explores Maestro, which compresses models by identifying low-rank layers through Ordered Dropout, balancing size and accuracy in machine learning.

Samuel Horvath is an assistant professor of Machine Learning at Mohamed bin Zayed University of Artificial Intelligence (MBZUAI). Prior to that, he completed his MS and Ph. D. in statistics at King Abdullah University of Science and Technology (KAUST), advised by professor Peter Richtárik. Before, he was an undergraduate student in Financial Mathematics at Comenius University.
His research focuses on providing a fundamental understanding of how distributed and federated training algorithms work and how they interact with different sources of heterogeneity, such as system-level variability in the computing infrastructure and statistical variability in the training data. Inspired by the theoretical insights, he aims to design efficient and practical distributed/federated training algorithms.
His interests include federated learning, distributed optimization, and efficient deep learning.