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Deep Learning usage by large experiments

Monday 21 August 2017 11:00 (30 minutes)

Modern machine learning (ML) has introduced a new and powerful toolkit to High Energy Physics. While only a small number of these techniques are currently used in practice, research and development centered around modern ML has exploded over the last year(s). I will highlight recent advances with a focus on jet physics to be concrete. Themselves defined by unsupervised learning algorithms, jets are a prime benchmark for state-of-the-art ML applications and innovations. For example, I will show how deep learning has been applied to jets for classification, regression, and generation. These tools hold immense potential, but incorporating domain-specific knowledge is necessary for optimal performance. In addition, studying what the machines are learning is critical for robustness and may even help us learn new physics!

Presenter: Dr NACHMAN, Ben (Lawrence Berkeley National Lab. (US))

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