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Machine learning in jet physics

Wednesday, 11 April 2018 11:00 (20 minutes)

High energy collider experiments produce several petabytes of data every year. Given the magnitude and complexity of the raw data, machine learning algorithms provide the best available platform to transform and analyse these data to obtain valuable insights to understand Standard Model and Beyond Standard Model theories. These collider experiments produce both quark and gluon initiated hadronic jets as the core components. Deep learning techniques enable us to classify quark/gluon jets through image recognition and help us to differentiate signals and backgrounds in Beyond Standard Model searches at LHC. We are currently working on quark/gluon jet classification and progressing in our studies to find the bias between event generators using domain adversarial neural networks (DANN). We also plan to investigate top tagging, weak supervision on mixed samples in high energy physics, utilizing transfer learning from simulated data to real experimental data.

Intended contribution length

20 minutes

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