



Contribution ID: 165

Type: Oral

Event Reconstruction on NOvA and DUNE with Deep Convolutional Networks

Deep Convolutional Neural Networks (CNNs) have been widely used in the field of computer vision to solve complex problems in image recognition and analysis. Recently, we have applied a Deep Convolutional Visual Network (CVN), to identify neutrino events in the NOvA experiment. NOvA is a long baseline neutrino experiment whose main goal is the measurement of neutrino oscillations. It relies on the accurate identification and reconstruction of the neutrino flavor in observed interactions. In 2016 the NOvA collaboration observed oscillations in the $\nu_\mu \rightarrow \nu_e$ channel, a first HEP result employing CNNs. In this presentation, I will describe the core concepts of CNNs, how we apply them to identify NOvA events, and the details of their implementation in the Caffe framework. I will also discuss the recent developments in the application of CNNs for particle tagging and other ongoing work in neutrino event reconstruction in NOvA and DUNE.

Author: PSIHAS, Fernanda (Indiana University)

Presenter: PSIHAS, Fernanda (Indiana University)

Session Classification: Track 2: Data Analysis - Algorithms and Tools

Track Classification: Track 2: Data Analysis - Algorithms and Tools