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Deep Learning Neutrino Event Reconstruction at DUNE

Thursday 9 September 2021 15:20 (20 minutes)

DUNE is a next-generation international neutrino experiment designed to measure CP violation in neutrinos and the neutrino mass hierarchy, among other BSM goals. DUNE far detector modules are based on the liquid argon time projection chamber (LArTPC) technology, which offers an excellent spatial resolution and potentially allows excellent identification of individual particles. However, neutrino event reconstruction in LArTPC is challenging due to the complexity of the detector and topologies of the events. To address these issues, neutrino events can be reconstructed directly from images of neutrino interactions with deep learning methods, such as Convolutional Neural Networks (CNNs). In this talk, I will discuss the development of deep-learning-based reconstruction methods at DUNE. Compared with traditional reconstruction, these methods show a significantly better performance in simulated DUNE data.

Working group

WG1

Primary author: BIAN, Jianming (University of California Irvine (US))

Presenter: BIAN, Jianming (University of California Irvine (US))

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