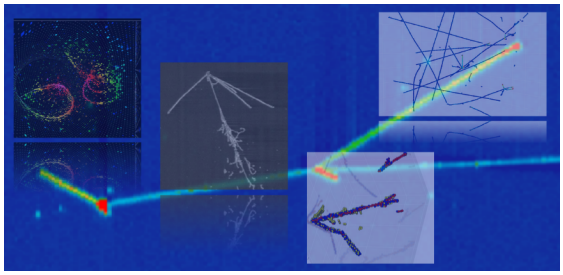

Contribution ID: **24** Type: **Individual Talk**

Identifying Particles and Neutrino Final States with Convolutional Neural Networks in MicroBooNE

Tuesday, 22 August 2023 15:30 (35 minutes)

MicroBooNE, a Liquid Argon Time Projection Chamber (LArTPC) located in the ν_μ-dominated Booster Neutrino Beam at Fermilab, has been studying ν_e charged-current (CC) interaction rates to shed light on the measured MiniBooNE low energy excess. The LArTPC technology pioneered by MicroBooNE provides the capability to image neutrino interactions with mm-scale precision. Computer vision techniques can be used to process these images and aid in selecting ν_e-CC and other rare signals from large cosmic and neutrino backgrounds. We present a new suite of deep learning tools to reconstruct neutrino interactions in MicroBooNE, with a focus on a convolutional neural network used to accurately assign labels to reconstructed particles. We will show that these techniques can be used to select ν_e-CC events at purities and efficiencies that are competitive with the tools currently in use in MicroBooNE and that they have the potential to improve the sensitivity of future analyses.

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Session Classification: Session 2