



Poster session 1 - Monday 4 July

P1.032 The convolutional visual network (CVN) algorithm and its applications to NO ν A event identification and reconstruction

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on behalf of NO ν A collaboration

In the past year, the NO ν A experiment has released results for the observation of neutrino oscillations in the $\nu_{\mu} \rightarrow \nu_e$ and $\nu_{\mu} \rightarrow \nu_{\mu}$ channels as well as ν_e cross section measurements using neutrinos from Fermilab's NuMI beam. These and other measurements in progress rely on the accurate identification and reconstruction of the neutrino flavour and energy recorded by our detectors. This presentation describes the first application of convolutional neural network technology for event identification and reconstruction in particle detectors like NO ν A.

Convolutional neural networks have been widely applied in the computer-vision community to solve complex problems in image recognition and analysis. I will describe in detail the Convolutional Visual Network (CVN) Algorithm developed for identification, categorization, and reconstruction of NO ν A events and I will show its performance for particle identification and event classification for ν_e appearance, ν_{μ} disappearance and neutral current analyses.