[PoS-1054] Direction Reconstruction using a CNN for GeV-scale Neutrinos in IceCube

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What is this contribution about?

A fast and robust method to reconstruct neutrino incident direction (zenith angle) for low-energy atmospheric neutrinos in the DeepCore detector.

Why is this relevant / interesting?

The standard likelihood-based reconstruction method is slow and not effectively extendable to the future upgrade of the experiment.

What have we done?

We have employed a convolutional neural network (CNN) to reconstruct the low-energy neutrino zenith angle in the DeepCore detector.

What is the result?

The performance of the CNN reconstruction is comparable to the standard likelihood-based algorithm while the CNN is running up to ~10,000 times faster than the likelihood-based method.