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Neutrino Direction Reconstruction using a CNN for GeV Scale Neutrinos in IceCube SHIQI YU, Michigan State University, ICECUBE COLLABORATION — The IceCube Neutrino Observatory is designed to observe neutrinos interacting deep within the South Pole ice. It consists of 5,160 digital optical modules, which are arrayed over a cubic kilometer from 1,450 m to 2,450 m depth. At the center of the array is a subdetector, DeepCore. It has a denser configuration which lowers the observable energy threshold to about 10 GeV and creates the opportunity to study neutrino oscillations with low energy atmospheric neutrinos. A precise reconstruction of neutrino direction is critical in the measurements of oscillation parameters. In this poster, I will present a method to reconstruct the zenith angle of 10-GeV scale events in IceCube by using a convolutional neural network (CNN). Compared to the current likelihood-based reconstruction algorithm, the CNN method shows improvements in both angular resolution and processing speed.

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