

Abstract Submitted  
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**Neutrino Event Reconstruction using Instance Segmentation on NOvA**<sup>1</sup> MICAH GROH, Indiana Univ - Bloomington, NOVA COLLABORATION  
— The NOvA experiment is a long baseline neutrino oscillation experiment measuring neutrino oscillations and cross sections using the NuMI beam at Fermilab. Reconstructing particles produced in neutrino interactions provides the basis for neutrino energy estimation and final state identification for cross section measurements and interaction model tuning. This talk will present an end-to-end technique for reconstructing a neutrino interaction using instance segmentation based on Mask R-CNN. This technique simultaneously reconstructs particle hit clusters and classifies the particle identity. This has now been incorporated into NOvA's analysis framework. On average, three additional particles are reconstructed per event and the average purity of clusters increases by 20

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