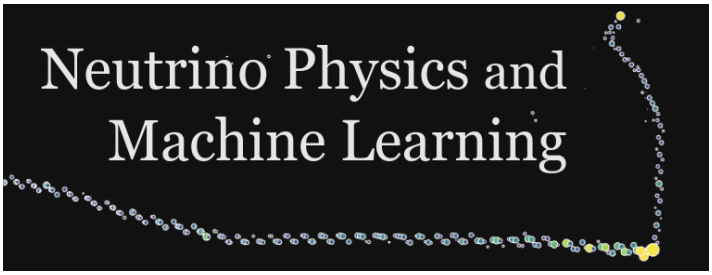

Contribution ID: **32** Type: **Individual talk**

Scalable 3D Semantic Segmentation and Point Proposal Network for large-scale high resolution particle imaging detectors

Friday, 10 July 2020 14:20 (25 minutes)

Particle imaging detectors such as Liquid Argon Time Projection Chambers offer high resolution imaging of charged particle trajectories. They are used and will be used in current and future neutrino experiments to maximize physics output from neutrino interactions. In order to understand the physics behind the neutrino-nucleus interactions, which remain poorly known today, the SLAC machine learning group has developed a deep learning based full data reconstruction chain that can produce interpretable physics output with reconstructed objects and their hierarchical correlations as evidence. In this short talk, I will describe the technical details about the part of our reconstruction chain that is responsible for extracting pixel-level feature information based on two computer vision tasks, semantic segmentation and object detection, enabling the reconstruction of the pixel-level particle type classification as well as start and end position of particle trajectories.

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