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1D CNN ROI finder

Modern neutrino experiments like the Deep Underground Neutrino Experiment will make use of Liquid Argon Time Projection Chamber (LArTPC) detectors that involve tens of thousands of readout channels. Reading out the raw wire waveforms from all these channels, especially for low-energy phenomena, can prove challenging in terms of the large data volumes. We describe a Machine Learning-based approach that uses lightweight 1D CNNs to discriminate signal-like from background-like waveforms. We also discuss our extension of this application from a simple classifier to a Region-Of-Interest (ROI) finder that can identify the location of the signal within the full waveform. I will present results that help quantify the performance of the method. This technique will be useful as a trigger or filter in data acquisition at the early stages of offline reconstruction

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