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"Freight Train" production model on the NOvA experiment and NOvA efforts at Argonne Leadership Computing Facility

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A significant challenge for many experiments is how to store, move, and process large amounts of data in an effective manner. The NuMI Off-axis ν_e Appearance (NOνA) experiment is one such experiment. The freight train model aims to alleviate this strain by improving upon the way data files are processed. Data from NOνA is stored on physical tapes at Fermilab, in the past the basic production principle was to decide on a type of event to get the information of, and then pull all tapes that had these types of events. This led to pulling tapes multiple times, which caused a bottleneck for production. Freight train production has changed this methodology and now pulls tapes in order and processes every event type that we wish to have. Another feat in efficiency that NOνA is performing is shipping off files to Argonne Leadership Computing Facilities Theta GPU farm, to undergo cosmic filtering. This is a computationally expensive task and harnessing the parrallelization power of a GPU is highly beneficial.

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