

Workshop on Machine Learning for Analysis of High-Energy Cosmic Particles



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Type: **Talk**

Towards improving efficiency of machine learning techniques in neutrino telescopes

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Neutrino telescopes detect rare interactions of particles produced from some of the most extreme environments in the Universe. Given the rate of backgrounds, these telescopes amass an enormous quantity of large variance, high-dimensional data. These attributes create substantial challenges for analyzing and reconstructing neutrinos, particularly when utilizing machine learning (ML) techniques. In this talk, I will present methods to efficiently manage and process these events using ML techniques, while preserving as much information as possible. These methods include employing autoencoder networks to generate compact representations of high-dimensional data associated to neutrino events and utilizing sparse networks to substantially reduce memory usage and runtime. The ultimate aim of these efforts is to enable high-quality ML-based reconstructions during the earlier stages of data processing.

Type of Contribution

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