Contribution ID: **76**   Type: **Poster**

A flexible and efficient machine learning approach for data quality monitoring

Wednesday 14 September 2022 19:05 (10 minutes)

We present a machine learning approach for real-time detector monitoring. The corresponding core algorithm is powered by recent large-scale implementations of kernel methods, nonparametric learning algorithms that can approximate any continuous function given enough data. The model evaluates the compatibility between incoming batches of experimental data and a reference data sample, by implementing a hypothesis testing procedure based on the likelihood ratio. The resulting model is fast, efficient and agnostic about the type of potential anomaly in the data. We show the performance of the model on multivariate data from muon chamber monitoring.

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Session Classification: Wine Tasting and Poster Session

Track Classification: Particle Physics