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Exploring Optimal Transport for Event-Level Anomaly Detection at the Large Hadron Collider

Monday 13 May 2024 14:45 (15 minutes)

Anomaly detection is a promising, model-agnostic strategy to find physics beyond the Standard Model. Stateof-the-art machine learning methods offer impressive performance on anomaly detection tasks, but interpretability, resource, and memory concerns motivate considering a wide range of alternatives. We explore using the 2-Wasserstein distance from optimal transport theory, both as an anomaly score and as input to interpretable machine learning methods, for event-level anomaly detection at the Large Hadron Collider. The choice of ground space plays a key role in optimizing performance. We comment on the feasibility of implementing these methods in the L1 trigger system.

Mini Symposia (Invited Talks Only)

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