Contribution ID: **62** Type: **not specified**

Robust anomaly detection using NuRD

Wednesday 2 November 2022 10:05 (20 minutes)

Anomaly Detection algorithms are crucial tools for identifying unusual decays from proton collisions at the LHC and are efficient methods for seeking out the possibility of new physics. These detection algorithms should be robust against nuisance kinematic variables and detector conditions. To achieve this robustness, popular detection models built via autoencoders, for example, have to go through a decorrelation stage, where the anomaly thresholds for the scores are decorrelated with the nuisances; this post-training procedure sacrifices detection accuracy. We propose a class of robust anomaly detection technique that accounts for nuisances in the prediction, called Nuisance-Randomized Distillation (NuRD). Our nuisance-aware anomaly detection methods we build with NuRD do not require the extra decorrelation step (and therefore do not suffer the associated accuracy loss).

Primary authors: PULI, Aahlad; GANDRAKOTA, Abhijith (Fermi National Accelerator Lab. (US)); ZHANG, Lily (New York University)

Co-authors: NGADIUBA, Jennifer (FNAL); TRAN, Nhan (Fermi National Accelerator Lab. (US))

Presenter: GANDRAKOTA, Abhijith (Fermi National Accelerator Lab. (US))

Session Classification: Anomaly Detection