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Exploring Data Challenges and Leveraging Codabench: A Practical Journey with unsupervised New Physics detection at 40 MHz

mercredi 29 novembre 2023 11:30 (25 minutes)

This talk delves into our team's experience in orchestrating an unsupervised New Physics detection at 40 MHz, shedding light on the intricacies of design, implementation, and lessons learned.

We challenged the community to develop algorithms for detecting New Physics by reformulating the problem as an out-of-distribution detection task.

We provided datasets with four-vectors of the highest-momentum jets, electrons, and muons produced in a LHC collision event, together with the missing transverse energy, while the goal was to find a-priori unknown and rare New Physics hidden in a data sample dominated by ordinary Standard Model processes, using anomaly detection approaches.

We share insights gained from the past, highlighting the challenges faced and the innovative solutions employed to foster engaging and impactful competitions.

Furthermore, the presentation shifts focus to our recent exploration of Codabench as a versatile platform for orchestrating data challenges.

We share our firsthand experiences with Codabench, emphasizing its capabilities in simplifying the challenge setup process, fostering collaboration among participants, and streamlining the evaluation workflow.

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Classification de Session: Benchmark, Datasets and Challenges

Classification de thématique: Benchmarks dataset and challenges