Contribution ID: **323** Contribution code: **WED 06**   Type: **Poster**

A Streamlined Neural Model for Real-Time Analysis at the First Level of the LHCb Trigger

Wednesday 23 October 2024 16:00 (15 minutes)

One of the most significant challenges in tracking reconstruction is the reduction of "ghost tracks," which are composed of false hit combinations in the detectors. When tracking reconstruction is performed in real-time at 30 MHz, it introduces the difficulty of meeting high efficiency and throughput requirements. A single-layer feed-forward neural network (NN) has been developed and trained to address this challenge. The simplicity of the NN allows for parallel evaluation of many track candidates to filter ghost tracks using CUDA within the Allen framework. This capability enables us to run this type of NN at the first level of the trigger (HLT1) in the LHCb experiment. This neural network approach is already utilized in several HLT1 algorithms and is becoming an essential tool for Run 3. Details of the implementation and performance of this strategy will be presented in this talk.

Primary authors: DE OYANGUREN CAMPOS, Arantza (Univ. of Valencia and CSIC (ES));   JASHAL, Brij Kishor (RAL, TIFR and IFIC);   ZHUO, Jiahui (Univ. of Valencia and CSIC (ES));   KHOLOIMOV, Valerii (Instituto de Física Corpuscular (Univ. of Valencia));   SVINTOZELSKYI, Volodymyr (Univ. of Valencia and CSIC (ES))

Presenters: ZHUO, Jiahui (Univ. of Valencia and CSIC (ES));   SVINTOZELSKYI, Volodymyr (Univ. of Valencia and CSIC (ES))

Session Classification: Poster session

Track Classification: Track 2 - Online and real-time computing