Contribution ID: **5** Type: **not specified**

Deep learning for 40 MHz scouting with Level-1 trigger muons for CMS at LHC run-3

Thursday 24 September 2020 16:56 (7 minutes)

Project Description: CMS will include a new paradigm for the Level 1 Trigger at CMS run 3. This is the approach of reading out trigger objects at the full collision rate (40 MHz), in order to perform studies and take measurements not possible with the constraints of the allowed 100 KHz Level 1 rate. One such set of trigger objects are the Global Muon Trigger objects. The Global Muon Trigger accumulates muon candidates from barrel, endcap, and overlap trigger regions, and selects eight based on their quality and transverse momentum to send to the Global Trigger. A deep learning machine inference solution has been proposed to manipulate these trigger objects such that they are more usable in offline or semi-offline analysis, rather than simply near the triggering thresholds. This can be done by targeting the offline reconstructed objects with an artificial neural network. This machine inference will be done in Micron provided FPGA-based data-processing PCIe boards. The project will focus on data analysis and the development of machine learning models.

Presenter: POPA, Maria (Babes Bolyai University, Cluj Napoca, Romania)