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HEP.TrkX [Vidyo]

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Reconstruction of charged particle tracks is a central task in the processing of physics data at the LHC and other colliders. Current state-of-the-art tracking algorithms are based on the Kalman filter and have seen great success both offline and at trigger level. However, these algorithms scale poorly with increasing detector occupancy, and it is foreseen that significant changes will be needed to achieve efficient track reconstruction in very high luminosity conditions. The HEP.TrkX pilot project aims to develop and explore machine-learning-based algorithms for particle tracking, with the goal of identifying candidate techniques for a more scalable tracking algorithm. In this talk we will discuss the techniques explored in the project so far, with emphasis on algorithms based on recurrent and convolutional neural networks. We will demonstrate the performance of these algorithms on toy detector data, and discuss plans to adapt them into complete algorithms for seed-finding and/or full track reconstruction in a realistic detector environment.

Presenter: ANDERSON, Dustin James (California Institute of Technology (US))

Session Classification: Closing Session