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An Internet Of Things (IoT) pilot project as a primer for the future development of IoT technology for particle physics detector data acquisition systems.

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Data AcQuisition (DAQ) systems are highly susceptible to technological development due to the intricate relationship between their design and currently available hardware. As a result, they are required to continuously evolve alongside one another. This when coupled to the manner in which particle detectors such as ATLAS are required to evolve in order to accommodate ever-increasing instantaneous luminosities provides a unique opportunity for the development of novel DAQ systems. Once such technology can broadly be referred to as IoT. IoT can be defined as wireless communication amongst various devices themselves as well as an external network. The technology has broad application to current and future detectors. The Wits Institute for Collider Particle Physics is undertaking a pilot project in order to develop the core skills required for the future development of IoT technology within particle detectors. This project involves the creation of a system composed of a mesh network with individual nodes consisting of a sensor array. The nodes will implement embedded Tiny Machine learning in order to process data from the sensor array before the data is transmitted to an external network. An overview of the project will be provided with an IoT use case within particle detectors being discussed and will culminate in the presentation of the pilot project.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

PhD

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