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## The Edge of Tomorrow: Real-time Artificial Intelligence for Science

*Wednesday, September 6, 2023 11:30 AM (1h 10m)*

**Abstract:** Pursuing answers to fundamental questions about our nature requires searches for the ultra-rare, very subtle, and the inspection of nature at extremely fine spatial and temporal scales. Cutting-edge experiments are often confronted with massive amounts of very rich data on which Artificial Intelligence (AI) techniques provide powerful insights. To accelerate scientific discovery, enabling powerful AI algorithms across the data processing continuum, as close to sensor front-ends as possible, is becoming increasingly valuable. To deploy AI in these challenging scientific environments, we require robust and efficient learning and usable and accessible tool flows for optimized training and implementation across a broad range of scientific domains. This talk will introduce the motivations and requirements for real-time AI applications for physics and connections to broader science and industry applications, the development of modern techniques for deploying them into our experiments, and open research questions and challenges.

**Lecturer:** Nhan Tran is a Wilson Fellow at Fermi National Laboratory, FNAL, USA. Tran's research focus is on using accelerator-based experiments, such as CMS at the LHC, to search for new phenomena. His current activities center on the Higgs boson and dark sectors experiments. He is developing technology at the intersection of electronics, computing, and artificial intelligence to amplify experimental capabilities. He was a postdoctoral associate at Fermilab, and prior to that he received his PhD from Johns Hopkins University in 2011 and his bachelor's degree from Princeton University in 2005. Tran is a recipient of the URA Tollestrup Award, the APS Henry Primakoff Award, and the DOE Early Career Award. (Text courtesy by FNAL).

**Presenter:** Dr TRAN, Nhan (Fermi National Accelerator Lab. (US))

**Session Classification:** Introduction to Artificial Intelligence and Hardware based applications