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Type: **Talk**

## Machine Learning and Artificial Intelligence in Physics: Overview and Applications

*Wednesday, 2 February 2022 16:00 (1h 30m)*

The use of computational algorithms, implemented on a computer, to extract information from data has a history that dates back to at least the middle of the 20th century. However, the confluence of three recent developments has led to rapid advancements in this methodology over the past 15-20 years: the advent of the era of large datasets in which massive amounts of data can be collected, stored, and accessed efficiently; the development of computational algorithms that can perform classification and prediction to high degrees of accuracy across a variety of applied situations; and broad access to the computational power of modern computing systems that allow for the building of complex models of phenomenology in diverse domains. In this talk I will describe the basic fundamentals of Machine Learning (ML), how ML is used to extract information from data, the potential pitfalls to avoid when using ML in a variety of applications, the relationship between ML and what is currently commonly referred to as Artificial Intelligence (AI), and the transferability of ML from physics-based to non physics-based problems. The second half of this presentation will consist of a live demo applying ML to a physics application in the Python coding language using publicly available tools.

### Type of Contribution

talk

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