



MACHINE LEARNING FOR ASTROPHYSICS

2ND EDITION CATANIA, 8-12 JULY, 2024

Contribution ID: 196

Type: **Oral Presentation**

[INVITED] Astroparticle Physics and Deep Learning

Friday, 12 July 2024 09:00 (40 minutes)

Algorithms based on machine learning have been extraordinarily successful across many domains, including computer vision, machine translation, engineering, and science.

Moreover, in the physical sciences, the importance of machine learning is growing fast, driven by the necessity for precise and efficient algorithms that can effectively handle vast amounts of complex and high-dimensional data.

Recently, with the help of these novel algorithms, providing improved reconstructions, new insights into astroparticle physics could be gained, raising the question: Could machine learning even become a new paradigm for data-driven knowledge discovery?

In this contribution, we review the state of machine learning in astroparticle physics after introducing the fundamental concepts.

We outline the potential of this emerging technology, illustrate the wide variety of possible applications in the context of astroparticle physics, and review the latest breakthroughs.

Finally, we present novel approaches and techniques and discuss future applications and challenges in the field.

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Session Classification: Astroparticle Physics / Space Weather