

OASIS AI Workshop 2024

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May 13, 2024

OASIS AI 2024

An continuation of work started under the OASIS ANR

- A yearly reminder of what we are doing in the AGATA collaboration
- Not only for HPGe and γ -ray tracking

To inspire and exchange ideas.

- How is doing what?
- Are we advancing AGATA with what we do?
- Is there a low-hanging fruit for AI (calibration, particle identification. . .)

What does chatGPT think?

ChatGPT 3.5 ▾



Vous

Can artificial intelligence help improve gamma-ray tracking arrays?



ChatGPT

Yes, artificial intelligence (AI) can indeed play a significant role in improving gamma-ray tracking arrays. These arrays are used in various fields such as nuclear physics, medical imaging, and astrophysics to detect and analyze gamma rays emitted from radioactive sources or celestial objects.

Here are several ways AI can contribute to enhancing gamma-ray tracking arrays:

1. **Signal Processing:** AI algorithms can be utilized to efficiently process the signals received by the detectors, enhancing the accuracy of event reconstruction and reducing background noise.
2. **Pattern Recognition:** Machine learning algorithms can be trained to recognize patterns in the data generated by gamma-ray interactions, helping to identify specific types of events or particles.
3. **Calibration and Calibration Monitoring:** AI techniques can assist in calibrating the detectors and monitoring their performance over time, ensuring accurate and reliable measurements.
4. **Data Analysis and Interpretation:** AI can analyze large volumes of data from gamma-ray observations, identifying significant events or phenomena that may be of scientific interest.
5. **Optimization of Detector Configurations:** AI algorithms can optimize the configuration of gamma-ray tracking arrays, such as the placement and orientation of detectors, to maximize sensitivity and resolution.
6. **Real-time Decision Making:** In applications where real-time decisions are required, AI can analyze data on the fly, enabling quick responses to changing conditions or unexpected events.

Overall, the integration of AI techniques with gamma-ray tracking arrays has the potential to improve their performance, increase their scientific yield, and facilitate discoveries in various fields of research.

OASIS WS on Machine Learning and AI in the AGATA community



📅 lundi 13 mai 2024, 13:00 → 18:10 Europe/Paris

Description A short meeting to make a snapshot of the work presently done and ideas for the future within the AGATA and OASIS communities. It will be held via ZOOM

Inscription Vous êtes inscrit(e) à cet événement

👤 14

[Verifier les details](#)

Participants



Amel KORICHI



Andy Boston



Araceli Lopez-Martens



Daniele Mengoni



DEBAJYOTI DAS



Emmanuel CLEMENT



Hemantika Sengar



Jeroen Bormans



Joa Ljungvall



Mikael Andersson

13:00 → 14:00 **Before coffee**



13:00

Introduction to the OASIS AI WS

🕒 20m



Orateur: Joa Ljungvall (IPhC/IN2P3/CNRS)

13:20

Utilizing machine learning for the data Analysis of the Strasbourg scanning tables

🕒 20m



Orateur: Mojahed Abushawish (Lyon-IP2I)

13:40

The use of Self-Organising Manifolds for Pseudo-Parametric PSA

🕒 20m



Orateur: Dr Fraser Holloway (University of Liverpool)

14:00 → 14:20

Coffee

🕒 20m

14:20 → 15:20 **After coffee**



14:20

To be decided

🕒 20m



Orateur: Daniele Brugnara (University of Padova - LNL INFN)

14:40

Tracking using IA

🕒 10m



Orateur: Mikael Andersson (KTH)