Contribution ID: **57** Type: **not specified**

AI-Legs Status Report

Thursday 29 May 2025 09:45 (15 minutes)

Gamma-ray astronomy in the MeV energy range offers the opportunity to investigate important scientific topics, such as nuclear processes, compact objects, cosmic rays and gamma-ray bursts (GRBs). However, in this energy range there is a significant lack of sensitivity compared to other gamma-ray bands. Imaging techniques represent a fundamental tool for signal reconstruction and analysis in this context. The project aims to develop a new image reconstruction algorithm based on advanced machine learning techniques, aimed at interpreting the energy deposits of photons incident on calorimetric modules installed on board space missions. The goal is the precise localization of galactic sources emitting low-energy photons. To achieve this goal, a Monte Carlo simulation of the experimental apparatus was implemented using the Geant4 platform, followed by the development of machine learning models based on CNN and GNN architectures. The presentation will illustrate the current status of the project, the most recent results obtained through Monte Carlo simulation and some proposals under study for classification through Machine Learning techniques.

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Session Classification: Bandi a Cascata