Machine Learning Based Fast Simulation Tools

Develop specific Machine Learning Tools for Fast Simulation applications:

- Understand the particularities of HEP data and their play in building models able to understand the large array of possible data configurations, complex densities, nonlinear, long-range correlations and input varying dependencies

- Integrate DL simulation methods with an existing Full Simulations toolkit (Geant4), provide a light-weight, dependency-free platform for Fast Simulation Deep Learning Inference

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Machine Learning Based Fast Simulation Tools - Status

- Webpage reference: https://geant4.web.cern.ch/node/1882

- Repository

    - Inference Module is functional standalone, refactoring is on going for future integration within Geant4 - Github hosted

- Plan

    - Further develop the Inference Module to be easily integrated within Geant4
    - Test different dataset configurations for the autoregressive model to understand the implications on the generation output
    - Work on building a dataset for graph based generative models