

Fast simulation of the electromagnetic calorimeter response using Self-Attention Generative Adversarial Networks

Tuesday 18 May 2021 15:13 (13 minutes)

Simulation is one of the key components in high energy physics. Historically it relies on the Monte Carlo methods which require a tremendous amount of computation resources. These methods may have difficulties with the expected High Luminosity Large Hadron Collider need, so the experiment is in urgent need of new fast simulation techniques. The application of Generative Adversarial Networks is a promising solution to speed up the simulation while providing the necessary physics performance. In this paper we propose the Self-Attention Generative Adversarial Network as a possible improvement of the network architecture. The application is demonstrated on the performance of generating responses of the LHCb type of the electromagnetic calorimeter.

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Session Classification: Artificial Intelligence

Track Classification: Offline Computing