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Synthetic data generation for the training of trigger systems and embodied models.

The sheer volume and complexity of data from high-energy physics experiments makes neural networks particularly attractive for the implementation of trigger systems. On the other hand, a large amount of classified and labelled data is required to train a network and this can be a complex task, especially if the experimental data were in the form of images. In this contribution we discuss the possibility of constructing a synthetic dataset using other neural networks that can be trained with a small number of real-world data examples. This synthetic dataset can be used to train pattern recognition systems as well as to train embodied models to make the measuring instrument an independent robotic system. An example of this technique applied to images of the plastic detectors of the MoEDAL experiment at CERN will be shown.

AI keywords

pattern recognition; training dataset; generative networks; embodied models; multimodal models

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Track Classification: Datasets & Ethics