Particle Identification with Machine Learning

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The electromagnetic calorimeter (ECAL) is an important subdetector of the CMS experiment in the Large Hadron Collider at CERN. This work aims the identification of electrons, photons and pions, by observing the signature of these particles in the barrel section of the ECAL. We use a computer vision approach to deal with the energy distributions, specifically, we solve a supervised classification problem with three target classes. Our classification model is based upon one of the most effective machine learning algorithms up to date: the artificial neural networks with convolutional layers.