Title:	Continuum Suppression in Belle II using Deep Learning
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Abstract:	The Belle II experiment at the Upsilon(4S) energy aims to study the properties of B- mesons. One of the challenges in studying these particles is continuum suppression, which refers to the difficulty of distinguishing between B-meson particles and other types of back- ground particles. One, suppression of spectroscopy, is a continuum that has been used to study them. In this study, we propose to use deep learning techniques to improve continuum suppression in the Belle II experiment. Deep learning is a powerful machine learning tech- nique that is well suited for image and pattern recognition tasks. By training a deep neural network on a large dataset of signal events (bb) and background events (udsc events), we can improve the ability of the Belle II experiment to accurately identify the particles and reduce the amount of background. In this study, several machine learning methods of clas- sification such as Deep Neural Networks, Random Forest & Decision Tree are tested to achieve continuum suppression. We also investigated the use of different types of input features, such as KSFW moments and Cleo cones, and found that incorporating these fea- tures improved the performance of deep learning models. Overall, our results demonstrate the potential of deep learning techniques to improve continuum suppression in the Belle II experiment.
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