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## Selective background Monte Carlo simulation at Belle II

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The large volume of data expected to be produced by the Belle II experiment presents the opportunity for studies of rare, previously inaccessible processes. To investigate such rare processes in a high data volume environment necessitates a correspondingly high volume of Monte Carlo simulations to prepare analyses and gain a deep understanding of the contributing physics processes to each individual study. This resulting challenge, in terms of computing resource requirements, calls for more intelligent methods of simulation, in particular for background processes with very high rejection rates. This work presents a method of predicting in the early stages of the simulation process the likelihood of relevancy of an individual event to the target study using convolutional neural networks. The results show a robust training that is integrated natively into the existing Belle II analysis software framework, with steps taken to mitigate systematic biases induced by the early selection procedure.

### Consider for promotion

No

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