

Abstract

B -factories (Belle I/II and Babar) are experiments that study the B mesons decay in electron-positron annihilation at the energy of the $\Upsilon(4S)$ resonance (10.58 GeV). Belle II is a successor of the Belle experiment and is expected to collect 50 times more data than Belle. Besides the desired collision containing a B meson pair (signal), Belle II also generates other events (u, d, s, c). These $udsc$ events (known as continuum events) acts as background if one is studying B decays. If one has to search for rare decays such as $B \rightarrow K^* \mu^- e^-$ (Lepton Flavor Violation) in search for New Physics, continuum needs to be suppressed in order to achieve sufficient sensitivity. Multivariate analysis methods are used to separate the signal and continuum events. Machine learning algorithms particularly neural networks have been quite successful in various classification problems. In this thesis, different machine learning algorithms are tested and compared for the continuum suppression using various libraries.