QBUS6850: Tutorial 09 Task – Extreme Gradient Boosting

Task 1: Hyperparameter selection of Gradient Boosting

In machine learning, hyperparameter optimization or tuning is the problem of choosing a set of optimal hyperparameters for a learning algorithm. For example, in Gradient Boosting Decision Tree, the value selection of learning rate ρ, number of trees and maximum depth of each tree.

The traditional way of performing hyperparameter optimization has been grid search, or a parameter sweep, which is simply an exhaustive searching through a manually specified subset of the hyperparameter space of a learning algorithm. A grid search algorithm must be guided by some performance metric, typically measured by cross-validation on the training set or evaluation on a held-out validation set. Since the parameter space of a machine learner may include real-valued or unbounded value spaces for certain parameters, manually set bounds and discretization may be necessary before applying grid search.

Continuing with the tutorial task 1 in **Tutorial_09.pdf**, you are required to use **GridSearchCV** function to find out the optimum value of ρ and maximum depth.