In-class Participation Assignment

Group 11

MIE 1624H Due: October 24, 2023

Support vector machines (SVM) algorithm is a classification technique based on the idea of non-probabilistic binary linear classifier.

Explain how SVM classification algorithm works and discuss its variants. Explain how SVM regression algorithm works.

In your IPython examples, show how to solve a classification problem of your choice and a prediction problem of your choice (select datasets that were not used in this course) using SVM algorithm for classification and SVM algorithm for regression. Visualize and explain accuracy of your results. In addition, use cross-validation to train your SVM algorithm and compare your results with and without cross-validation. Compute, plot and explain bias-variance tradeoff for your examples as well as hyperparameter tuning.

Prepare 10 minute presentation of your results. Before the presentation, upload your PowerPoint slides, PDF slides, IPython Notebook `ipynb` file(s) and all data files in `zip` archive via Quercus portal, such that those can be posted on the course web-page and re-used by your colleagues for assignments and a course project. Presentation materials should be uploaded to Quercus portal by 4:00pm on the due date. If you have any questions about your in-class presentation assignment, please contact course TAs Eric Floro `eric.floro@mail.utoronto.ca` or Arnaud Deza `arnaud.deza@mail.utoronto.ca`.