BIRZEIT UNIVERSITY

Department of Electrical and Computer Engineering
Summer Semester, 2023/2024
Intelligent Systems Lab, ENCS5141

Case Study #2: Comparative Analysis of Classification Techniques: Random Forest (RF), Extreme Gradient Boosting (XGBoost), and Multilayer Perceptron (MLP)

In this case study, you will compare the performance of Random Forest (RF), Extreme Gradient Boosting (XGBoost), and Multilayer Perceptron (MLP) models for predicting bike demand. Utilize the Bike Sharing Dataset from Case Study #1. Categorize bike demand as "extreme," "high," "medium," or "low" based on rental bike counts. Train and evaluate each model, analyzing their strengths and weaknesses in this context.

Submissions:

- You need to submit the code in .ipynb format. You can obtain this file in Google Colab by navigating to the File menu and selecting Download > Download .ipynb.
- Additionally, write a report detailing the case study. Ensure adherence to the report preparation guidelines outlined in the "ENCS5141 Case Study Report Guidelines.pdf" document. If you opt to write the report using LaTeX, utilize the provided report template "ENCS5141 Sample Report.tex"."

Important Notes:

- Make sure to add descriptive comments and headings using markup language, such as Markdown, in your Google Colab notebook or Jupiter notebook.
- **Deadline**: Sunday, 4 August 2024 at 11:59 pm. Please submit your case study solution and report through Ritaj as a reply to this message.
- **Late Submission Policy**: One mark (out of the 45 marks assigned to case studies in the course outline) will be deducted for every day of late submission of the case study report. No submissions will be accepted beyond the third day past the due date.