BT5153
Applied Machine Learning for Business Analytics
Academic Year 2019/2020 Semester 2
Lecturer: Dr. Rui ZHAO

Project Guidelines and Grading Criteria
Updated as of 13 Jan 2020

Project Description

The course project is aimed at allowing students to gain some hands-on experience in solving applied machine learning problems. In this project, you are tasked to apply relevant machine learning tools and techniques that you have acquired (of course, you are welcome to go beyond the scope of the course) to mine useful insights and arrive at meaningful conclusions for a real-world application. You are required to complete this project in groups of **4-5**, delivering three (3) components: Group Project Proposal, Group Project Presentation, and a Group Project Final Report. The **entire** Group Project will contribute **50%** to your overall grade. Details of each component, its requirements, and the respective grading criteria will be specified below.

Disclaimer:
Individuals in the same group will generally receive the same scores for all components of the Group Project, unless feedback is received that a particular member is only superficially participating and not doing actual work. Please voice out your concerns to the lecturer if you think it is necessary.

Important things to note:
Please name your files in the following format - proposal**XX**.pdf for Group Project Proposal, report**XX**.pdf for Group Project Final Report and presentation**XX**.pptx for Group Project Presentation where **XX** is your group number. For example, **Group 1**'s report should be **report01.pdf**. If not, your submission will be penalized for 2 points.

Project Component	**Due Date and Time**	**Submission Items**
Group Project Proposal	14 Feb 2020 @23:59	PDF Report
Group Project Presentation	03 and 17 Apr 2020 during the class	
Group Project Final Report	24 Apr 2020 @23:59	PDF Report Presentation Slides Completed Codes

Group Project Proposal

When to submit: 14 Feb 2020, Friday by 23:59
Who to submit: A representative from each group
What to submit: PDF report
Where to submit: ***LumiNUS > Group Project Proposal***

Guidelines

You are to submit a **3-5 page PDF report** that covers:

1. A description of the problem that you want to address. E.g., "What are the uprising tech trends in 2019?"
2. Some basic facts about the data, including the following:
    - Source of the dataset(s)
    - Data collection methods:
        - If you scraped the data, write about how you made use of scraping tools to get the desired data from Facebook/Twitter.
        - If you downloaded the data, gather the basic information on how the dataset was assembled by the creator **with proper reference**.
    - Describe the dataset(s) -E.g., number of observations, number of variables, type of variables (string, integer, etc.) [You may present the variables in table form.]
3. An explanation of what you think are the interesting aspects that you can look at in the dataset(s)
4. A discussion of what you hope to mine from the dataset(s)/some hypotheses that you might have in mind that you hope to verify - E.g. spot increasing trends etc.
5. A short discussion on some possible machine learning methods that you know/ learnt that you think may be applied to help you gather insights to solve/alleviate the problem/issue in (1)

Grading Criteria

The Group Project Proposal weighs **10%** of your overall final grade. Your proposal will be evaluated based on:

1. Concision of the introduction of your motivation/problem/issue
2. Description of the data and data collection methods (if any)
3. Clarity in the statement of your hypotheses/“to-find-out-about”
4. Correctness of the description of the methods you foresee applying

Basically, if you were to put in a decent amount of effort to do a proper write-up of the proposal, you will be awarded the 10%. And of course, you are saving yourself some time when you proceed to write the final report.

Group Project Presentation

When to present: 03 and 17 April 2020 during the class
Who to submit: Every member of the group should have a share in presenting
What to present: 15 minutes worth of slides containing highlights of your analysis

Guidelines
You are to prepare **15 minutes** worth of slides for presentation. The flow and content (please select the highlights of your analysis) of the presentation can follow that of the Group Project Final Report.

Grading Criteria
The Group Project Presentation weighs **20%** of your overall grade.

Group Project Final Report

When to submit: 24 April 2020, Friday by 23:59
Who to submit: A representative of each group to submit
What to submit: PDF Report + Presentation Slides + Completed Codes (zip everything)
*Where to submit: **LumiNUS > Group Project Presentation & Final Report***

Guidelines
You are to submit an **8-10 page PDF report** that extends/continues from your Group Project Proposal. A suggested outline of the Group Final Report includes:

1. A description of the problem (As stated in (1) of project proposal) or any minor adjustments if any
2. Some basic facts of the dataset(s) (As stated in (2) of project proposal)
3. A detailed discussion of the following:
    a. Pre-processing steps to sanitize/manipulate/combine your dataset(s)
    b. Machine learning models that you have used (E.g., Unsupervised? Supervised?) (Somewhat an extension of (5) of project proposal)
    c. The insights that you have gathered from applying machine learning methods on the dataset(s)
4. Conclusion
5. References: Must include a bibliography listing all references (including URLs, if any) cited

Required Format

The use of 10-point Times font is mandatory. The formatting should be referred to **ICML style**. The word template could be found **here**. The latex template is provided in the **overleaf**.

Grading Criteria

The Group Project Final Report weighs **20%** of your overall final grade. Your report will be evaluated based on:

1) Clarity and completeness of the report
2) Appropriateness of the models and methods applied for analysis
3) Coherence and consistency of proposed methods with hypotheses
4) Usefulness of your analysis in other similar real-world problems
5) Concise summarization of your work
6) Reasonability of the discussion of advantages and limitations of applied methods to the defined problem
7) Follow the formatting requirement

All the best for your project!

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