20/21 CSCM38 Advanced Topics: Artificial Intelligence and Cyber Security

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Released on 17th Nov 2020

Coursework 2 Complete by 18th Dec 2020

Implementation and Evaluation [50 marks in total]

In the previous coursework, you defined a small research project in the areas of Artificial Intelligence and Cyber Security. In coursework 2, you are required to implement a prototype or a part of your proposed method and evaluate it scientifically using the dataset that you have identified. Note that you may not able to implement the whole idea due to the scale of the project, therefore, a proof of concept study is sufficient for this coursework. You are required to write a maximum 8-pages research report to summarise the proposed solutions, the experimental results and findings.

Your report should contain the following sections and contents:

1. Proposed Method [**20 marks**]: Describe all technical details of how your solution is implemented and how the evaluation experiments are carried out step-by-step. Reproducibility of your experiment will be assessed. When alternative algorithms can be used, you can perform comparison study to justify the advantage and disadvantage of certain methods. This section may contain multiple sub-sections.
2. Result and Discussion [**20 marks**]: Provide relevant and meaningful experimental results, such as accuracy evaluation, statistical analysis and visualisation of performance and efficiency when necessary. An in-depth discussion of the results and your critical analysis on findings in general through those studies are also required. You may use figures and tables to demonstrate the experimental results for qualitative and quantitative analysis.
3. References [**2 marks**]: Include references where appropriate. **The reference section is not included in the page limit.**
4. Solution Code [**8 marks**]: The code may contains multiple source files. Attach all of them in your submission including proposed solution, experimental and comparison studies, visualisation and statistical analytics when necessary. A *"README.txt"* file describing how to run your codes is required. If the dataset is too big, you only need to provide a few samples. **DO NOT** include any source code to your report.

Page Limit: The report should be **no more than 8 pages excluding references**. Font size should be **no smaller than size 10**, and the text area is approximately 9.5x6 inches. You may use images but do so with care; do not use images to fill up the pages. You may use an additional cover sheet, which has your name and student number. **Reports that exceed the specified page limit will result in penalties: 5 marks deduction for every over-length page.**

Submission

Note that on the Canvas there are separated report and code submission entrances. The report must be submitted in **PDF** format. Submissions and feedback will be done via Canvas system. Zip your code and relevant file into one compressed file using the following naming convention for submission:

- [Student Number]-[Last Name][First Initial]-[Coursework][Number].zip
- For example: *123456-DengJ-Implementation.zip*

Policy

- To be completed by students working individually. **Plagiarism will not be tolerated.**
- Feedback: individual feedback is given on Canvas within two weeks after the deadline.
- Learning outcome: The tasks in this coursework are based on both your practical work in the lab sessions and your understanding of the theories and methods of data mining. Thus, through this coursework, you are expected to demonstrate both practical skills and theoretical knowledge that you have learned in this module. You will also formally present your understandings through technical writing. It is an opportunity to apply analytical and critical thinking, as well as practical implementation.
- Unfair practice: This work is to be attempted individually. You may get help from your lecturer, academic tutor and lab tutor, but you may not collaborate with your peers. Copy and paste from the Internet is not allowed. Using external code without proper referencing is also considered as breaching academic integrity.
- Submission deadline: The report need to be submitted electronically to Canvas by the deadline. In addition, you have a maximum 7-days late-submission allowance that can be used for both two courseworks. For example, the deadline of coursework 1 is 10^{th} Nov, but you submit your work on 13^{th} Nov, which means you have used 3-days late-submission allowance. Therefore, you only have 4-days late-submission allowances for coursework 2.