Assignment 1: Understanding the Literature

31005+32513 Machine Learning
Spring 2019

TASK

The goal of this assignment is to develop your skill in reading the machine learning literature. Being able to read and understand journal and conference papers and to critique them is an essential skill in your education in data mining, machine learning and artificial intelligence. Also, you can take this skill to other areas of computing.

You will write a report on the paper you choose. Your report will explain in your own words what the paper is about and will **critique** it. Your report should be drafted as a Jupyter/Colab notebook with the following structure:

Title

Introduction

Content Describe in your own words what the paper is about and what the main challenge or problem it attempted to resolve.

Innovation How innovative is the research work in the paper? Here you should describe the "novelty" of the paper. What does the paper contribute: a new method? an algorithm? a methodology? a comparison between methods? or something else?

Technical quality How would you rate the technical quality of the work in the paper? Here you should consider the quality of the work done. For example, a paper comparing classifiers on the basis of their accuracy on a training set would be of poor quality because generally the accuracy measured on a training set is higher than the actual test error. Other indicators of poor quality might be that the results in the paper could not be replicated by someone reading the paper (because they were not described clearly enough); a comparison was made between two things but the two things couldn't fairly be compared; or conclusions were drawn from too few experiments.

Application and X-factor Do you think the application domain is appropriate for the proposed technique? What other application domains could the research work be applied? Also in this section, give a couple of suggestions for further developments of the research work. Do you think the work described in the paper could spark a good discussion in class? What did you find interesting about the work?

Presentation How would you rate the quality of the presentation of the paper? Things you could consider here include: how easy it was to follow the argument in the paper; presentation style; depth of the argument; and clarity of the presentation.

References To answer the questions above in your report you will need to read other books or papers. List any references to other papers and books you read here. Referencing should be in the Harvard format. See the information at the UTS Library http://www.lib.uts.edu.au/help/referencing.

The size of the report should suit the need to clearly express your ideas. The following word counts can be considered as a typical volume for each section:

Content: 300
Innovation: 300
Technical Quality: 200
Application and X-Factor: 200
Presentation: 100

You can make good use of a notebook to collect references and experimenting with your ideas, e.g. to test if your understanding of the work is accurate, or to examine the time or storage complexity of an algorithm. You can include any relevant content in the "Draft and Experiment Area" section in your notebook. It is for your own reference and experiments. We will not mark the content there and plagiarism check won't apply either.

DUE DATE

Due date 11:59pm 28 Aug 2019

How to submit You need to add a link to your notebook in the "Report" section (i.e. the notebook will contain a link pointing to itself, you will see a demo in class), export the "Report" section of your notebook into a PDF file and submit the PDF report to UTSOnline.

Late Penalty: 10 marks per day (round-up) past deadline.

Extension: Extensions may be granted if arranged with the Subject Coordinator prior to the deadline and if decent progress/effort has been made at the time of application. We use github commission history of your draft report as evidence for progress/effort.

If your performance in an assessment item or items has been affected by extenuating or special circumstances beyond your control you may apply for Special Consideration. Information on how to apply can be found at http://www.uts.edu.au/current-students/managing-your-course/classes-and-assessment/special-circumstances/special.

Due to the size of our class, extensions will lead to delay in marking your assignment and **all future assignments and the final grade**.

ASSESSMENT

Group work This assignment is individual work.

Return I will endeavour to return marked assignments within three weeks.

Contribution to final mark This assignment contributes: 30% towards your final mark.

Objectives This assignment supports objectives 1 and 2 in the subject outline and Graduate Attributes B6 and E1.

Academic Standards Please see the subject outline for details on the ethical standards we expect from you.

Hours An average student should expect to spend around 20 hours to get a 50P result on this assignment.

Marking Scheme Your report will be marked based on how well you address each of the issues on the previous page as well as the quality of your report.

Addressing “Content”	20%
Addressing “Innovation”	20%
Addressing “Technical Quality”	20%
Addressing “Application and X-Factor”	15%
Addressing “Presentation”	5%
Layout and presentation of your report	20%
	100%

Marking criteria for main sections		
CONTENT	20	a complete and accurate understanding
	10	on-topic, some details missing or with some misunderstanding on side-issues
	0	off-topic or complete misunderstanding
INNOVATION	20	motivation and innovation clearly identified with appropriate critiques
	10	roughly understand why the paper was innovative, missing critics
	0	repeating the authors' claim, without showing understanding the background or motivation.
TECHNICAL QUALITY	20	accurate and appropriate comments on the technical aspects of the paper
	10	some understanding of the methodology, lack of comments
	0	do not understand the technical part of the paper
APPLICATION & X-FACTOR	15	relevant comments on the proposed application domain of the paper; proposing new applications or research ideas, which are based on careful argument and background review;
	10	relevant comments on the proposed application domain of the paper; reasonable new applications or research ideas;
	0	failed to link application with the technique
PRESENTATION	5	accurate comments on the representation and suggest how to improve
	0	show no understanding of the standard structure of an academic paper