

COMP5329 - Deep Learning

Assignment-2

Due: 31-May-2019 17:00 (Week 13)

Assignment-2 has two tracks: **competition track** and **research track**.

Students should attend one of the two tracks. 2 or 3 students are suggested to form a group to attend one of these two tracks.

1. Competition track description [100 Marks]:

The goal is to achieve the best classification performance as you can. You can use any dataset you can get for the training.

You can use any methods in deep learning to accomplish the classification task. You must guarantee that the submitted codes are self-complete, and can be successfully run in common python3 and **TensorFlow** environment.

The performance of your algorithms will be evaluated in terms of the accuracy metric, i.e.

$$\text{accuracy} = \frac{\text{number of correct classifications}}{\text{total number of test examples}} * 100\%$$

Groups participating in this track will be ranked according to their classification performance on the test set.

Given an image that has more than one ground-truth label, a correct classification implies that you have to correctly predict at least one ground-truth label.

Instructions to hand in the assignment

1.1 Go to Canvas and upload the following files/folders compressed together as a zip file

a) Report (a pdf file)

The report should include each member's details (student ID and name)

b) Code (a folder)

i. Algorithm (a sub-folder)

Your code (could be multiple files or a project)

ii. Input (a sub-folder)

Empty. Please do NOT include the dataset in the zip file as they are too large.

iii. Output (a sub-folder)

“Predicted_labels.txt” – This file contains the predicted labels of test examples and must follow the same format as file ‘train.txt’. We will use this file for grading.

If you work as a group, only one student needs to submit the zip file which must be named as student ID numbers of all group members separated by underscores. E.g. “xxxxxxxx_xxxxxxxxx_xxxxxxxxx.zip”

- 1.2 Your submission should include the report and the code. A plagiarism checker will be used. Clearly provide instructions on how to run your code in the appendix of the report.
- 1.3 The report must clearly show (i) details of your modules, (ii) the predicted results from your classifier on test examples, (iii) run-time, and (iv) hardware and software specifications of the computer that you used for performance evaluations.
- 1.4 There is no special format to follow for the report but please make it as clear as possible and similar to a research paper.
- 1.5 A penalty of MINUS 1 (one) points per each day after the due date. Maximum delay is 7 (seven) days, after that assignments will not be accepted.
- 1.6 Remember, the due date to submit them on Canvas is 31-May-2019, 17:00**

Late submission:

- Suppose you hand in work after the deadline:
- If you have not been granted special consideration or arrangements
 - A penalty of 20% of the available marks will be taken, per day (or part) late
- *Eg your work would have scored 60% and is 1 hour late*
 - *you get 40%*
- *Eg your work would have scored 70% and is 28 hours late*
 - *you get 30%*
- Submit early;

Marking scheme

Category	Criterion	Marks	Comments
Report [40]	Introduction [5] <ul style="list-style-type: none"> - What's the aim of the study? - Why is the study important? 		
	Techniques [10] <ul style="list-style-type: none"> - The principle of different techniques 		
	Experiments and results [15] <ul style="list-style-type: none"> - Accuracy - Extensive analysis 		
	Conclusions and Discussion [5] <ul style="list-style-type: none"> - Meaningful conclusion and discussion. 		
	Other [5] <ul style="list-style-type: none"> - At the discretion of the marker: for impressing the marker, excelling expectation, etc. Examples include fast code, using LATEX, etc. 		
Code [10]	Code runs within a feasible time [5]		
	Size of resulting deep models for the prediction < 100MB [5]		
Classification performance [50]	Groups in top 10% [50] Groups in top 10%-20% [45] Groups in top 20%-40% [40] Groups in top 40%-60% [30] Groups in top 60%-80% [20]		

	Valid classification results [10]		
Bonous [5]	Some insightful designs to improve the performance.		
Penalties [-]	Badly written code: [-20]		
	Not including instructions on how to run your code: [-30]		
	Late submission		

2. Research track description [100 Marks]:

This research track calls for brave new ideas on deep learning. In this track, you are encouraged to propose and investigate new algorithms or problems in deep learning.

You must not use the project (e.g. your capstone or SSP project) that you have already done or are currently doing in other units to participate in this track.

Selected groups for this research track have already been announced on Canvas.

You are encouraged to contact our teaching team, if you want to have some discussion on your proposed research problems.

Marking scheme

Category	Criterion	Marks	Comments
Report [60]	Introduction [10] - What is the research problem? - Why this research problem is important. - What is your major idea to solve this problem?		
	Related works [10] -The related works on this research problem.		
	Techniques [20] - The technical details of your proposed solution.		
	Experiments and results [10] - Comparison algorithms - Experimental tables and figures		

	- Analysis on the proposed solution.		
	Conclusions and Discussion [10] - Meaningful conclusion and discussion.		
Novelty [20]	The novelty of the proposed solution.		
Experiments [20]	Include related existing algorithms in comparison experiments.		
Bonus [5]	A presentation in class (week 13).		
Penalties [-]	Late submission: [-1] for each day late		

Submit the report and source codes in experiments on Canvas before the due date **31-May-2018**.

If you have any question about the assignment, please contact:

Dalu Guo dguo8417@uni.sydney.edu.au

Shumin Kong skon2020@uni.sydney.edu.au