

Deep Learning Assignment 1 Marking Scheme

M Madden, Jan 2024

Total: 20 marks.

Note: Please don't over-write your code for an earlier part when you move on to the next part; copy and modify the code so that we can see all parts and grade them all.

Part 1 – Implement Logistic Regression: 4 marks

- 1: Brief description of algorithm, including references to sources used.
- 3: Correct implementation of logistic regression (single-node neural net), including correct implementation of gradient descent, able to handle different numbers of training cases and different numbers of attributes.

Part 2 – Test on Easy Tasks: 3 marks

- 1: Code to read in a dataset with variable number of training cases and attributes, and divide it into a training set, validation set and testing set.
- 1: Blobs dataset: train the logistic regressor, use the validation set if needed, and test on the test set. Present results and observations on them.
- 1: Moons dataset: train the logistic regressor, use the validation set if needed, and test on the test set. Present results and observations on them.

Part 3 – Implement Shallow NN: 5 marks

- 1: Brief description of algorithm, including references to sources used.
- 3: Correct implementation of a feed-forward neural network with 1 hidden layer and a standard kernel such as sigmoid, including backprop, extending your previous implementation of logistic regression.
- 1: Train and test on the Blobs and Moons datasets, present results, and make observations on results.

Part 4 – Challenging Task: 3 marks

- 1: Code to read in the big dataset, and sample subsets for training, validation and testing.
- 1: Train the NN, tune on the validation set if required, and test on the test set.
- 1: Present results and make observations on your testing.

Part 5 – Deep Learning Enhancements: 5 marks

- 1: Brief description of your enhancement to the algorithm, including references used.
- 3: Correct implementation of your enhancement.
- 1: Perform new training and testing on the big dataset, present results, and make observations on your testing.

If two people are working on the assignment, Part 5 must be done twice, with each of you fully doing one (though you can still discuss it with the other person). Therefore, there must be two (rather than one) enhancements described and implemented, two sets of testing results, and two sets of observations. I will grade this separately per person.

Policy on two-person submissions:

- You are encouraged to work in pairs for Parts 1-4, but you cannot collaborate with any other people beyond that.
- Part 5 must be done twice for a 2-person assignment.
- Your documentation and code must be clear about what contributions each person made; it is not sufficient to say something like "we both worked on everything together". Put a comment in each code block saying who wrote it.
- Across all parts of the assignment, I may award different marks to each person doing a 2-person assignment if I feel that their contributions are not equal.
- For a 2-person group, only 1 person must make the submission, with both group members' names and IDs on it.

Policy on Plagiarism and Academic Misconduct:

Plagiarism is the act of copying, including paraphrasing or directly quoting from the work of another without adequate acknowledgement, in order to obtain benefit, credit or gain. Plagiarism can apply to many materials, such as words, ideas, images, information, data, approaches or methods. Sources of plagiarism can include books, journals, reports, websites, essay mills, generative AI, another student (current or former), or another person.

Since your work on this assignment must be your own, you are NOT permitted to use generative AI in this assignment for any purpose, including creating any parts of your code or helping you write part of the text. This is a form of academic misconduct and will be penalised.

- It is **your** responsibility to ensure that you understand the university's rules: please see QA220 Academic Integrity Policy and other resources provided.
- You are required to act with academic integrity in carrying out your assignments.
- If you have notified me that you are doing your assignment in a 2-person group, you should collaborate with that person, but you must not work with anybody else.
- You are NOT permitted to use generative AI in this assignment for any purpose, including creating any parts of your code or helping you write part of the text.
- Academic misconduct is particularly serious at postgraduate level.
- If there is academic misconduct in any part of your assignment, you will get 0 for your full assignment, with no option to resubmit, and your case will be entered on the university's Academic Misconduct Register.

Basics of checking for plagiarism or any other forms of dishonesty:

- In the grading spreadsheet, please highlight any suspected plagiarism, “unapproved group work”, or dishonesty. Colour coding or an extra column with notes would be helpful.
- You can use Turnitin’s plagiarism checking to draw attention to submissions that might need closer study, but there are no hard rules you can apply (e.g. no special threshold under which we don’t consider plagiarism), and sometimes Turnitin gives false positives, while other times it is fooled. I will review all cases that you highlight and make a final determination.
- If you feel strongly that an assignment is plagiarised, you don’t need to grade it, as the student will probably get 0. If you are less sure, please flag it to me for checking, but grade it also.
- Another form of dishonesty to watch out for is faking results.

More on plagiarism:

Here is the policy for various cases:

- *Sections where the student is to give brief descriptions and citations:*
If it is in their own words, and you are satisfied they did not plagiarise, only give half of the allocated mark, since the marks are for description+citation.
- *Text is copied from other sources without citation?*
This is clear plagiarism. Flag as plagiarism in the spreadsheet, provisionally award 0 for full assignment.
- *Text is copied from sources with citation?*
This is plagiarism, but arguably not as bad as the previous case. Flag to me for my review, and provisionally give them 0 marks for this part of the assignment.
- *Some code is copied from the web, and is cited?*
If it’s “non-core”, e.g. to open files etc. (I gave them code to open and visualise files and said they could use it).
If it’s “core”, e.g. part of the algorithm, this is unacceptable. Flag for my attention and provisionally award 0 for the section. (So they can still get marks for testing etc.)
- *Some significant code is copied from the web or a previous student, and is not cited?*
This is unacceptable. Flag for my attention and provisionally award 0 for the full assignment.
- *The student flags that they re-used code from a past Coursera or similar course they did?*
This is unacceptable. Coursera provided a large amount of the code and students just “fill in the blanks”, so a lot of what they submit will not be their own work. Flag for my attention and provisionally award 0 for the full assignment.
- *You believe code has been copied from the web or a previous student, and has been adjusted to disguise it (e.g. variables renamed)? Sometimes such code is identified because of unusual comments, unusual language constructs, or the order of implementation.*
This is unacceptable. Flag for my attention and provisionally award 0 for the full assignment.

In all cases, please highlight all potential plagiarism cases in the spreadsheet, even the “minor” ones, as I will have to review them and make a final decision on them.