

Dublin Business School Assessment Brief

Assessment Details

Module Title:	Machine Learning
Module Code:	B9DA109
Module Leader:	Courtney Ford
Stage (if relevant):	
Assessment Title:	Machine Learning Tasks
Assessment Number (if relevant):	
Assessment Type:	Practical
Restrictions on Time/Length :	
Individual/Group:	Group (max 3 students) Individual Tasks: To be done Individually
Assessment Weighting:	60%
Issue Date:	03-07-2023
Hand In Date:	
Task 1	09-07-2023
Task 2 & Task 3	02-08-2023
Planned Feedback Date:	
Mode of Submission:	Moodle Task 1 must be submitted on a separate link on Moodle named Task 1 Submission Task 2 must be submitted on the link CA_TWO_(60%)

Assessment Task – Total Marks: 100 – Weighting: 60%

The assignment has three tasks: **one individual (Task 1) and two tasks to be completed as a group.**

Task 1

Using the following dataset, create a Decision Tree Classifier to determine whether a patient has COVID-19.

Suppose the following dataset is about the symptoms of 20 people where the attribute “COVID-19” shows whether a person was diagnosed with Covid-19 or not. The attribute “COVID-19” is the dependent attribute with two values ('yes' or 'no'). Each person has 5 features, and you want to find out how these features help to predict whether they have Covid-19. You can solve this problem mathematically or using code. Please explain your process (if you solve this using code, you can add text blocks). You must test your model using a train/test split of the dataset below and include a short summary (minimum 150 words) of your findings.

This task is to be done independently. Working with your classmates on this task is strictly forbidden.

	Fever	Sore_Throat	Lost_Sense _Smell	Headache	Bodyache	COVID_19
0	Y	N	Y	N	Y	Y
1	N	N	N	Y	N	N
2	Y	N	N	N	Y	N
3	Y	N	Y	Y	Y	Y
4	N	N	N	Y	N	N
5	Y	N	N	Y	Y	N
6	N	Y	Y	N	N	N
7	Y	Y	N	N	Y	Y
8	N	Y	Y	Y	Y	N
9	Y	Y	N	Y	N	Y
10	N	Y	N	N	N	N
11	Y	Y	Y	Y	Y	Y
12	Y	Y	Y	N	Y	Y
13	Y	Y	N	Y	N	Y
14	N	N	N	Y	N	N
15	Y	Y	Y	N	N	Y
16	N	Y	N	Y	Y	N
17	N	N	Y	Y	N	Y
18	Y	Y	Y	Y	Y	Y
19	N	N	N	N	N	N

Do not zip the file. All PDFs/Word docs/IPYNB must be uploaded directly into Moodle.

(20 marks)

Task 2

Using the image dataset from the following link

(<https://drive.google.com/drive/folders/1zez0gf4iYq-oAgo9Ox3-ga6cs6WE0HEn?usp=sharing>) apply two classification models and compare their results. One model must be a convolutional neural network (CNN), and the second must use a transfer learning algorithm for the same dataset. To get full marks, you should also implement fine-tuning of the algorithms. The images provided are in their respective classification labels, so you must determine how to import and use the data. You must document your code and **give a full explanation about what each block of code does to receive full marks**. Save your Jupyter Notebook/Colab Notebook in this format:

Your_Name_Student Number_Task2.ipynb

(40 marks)

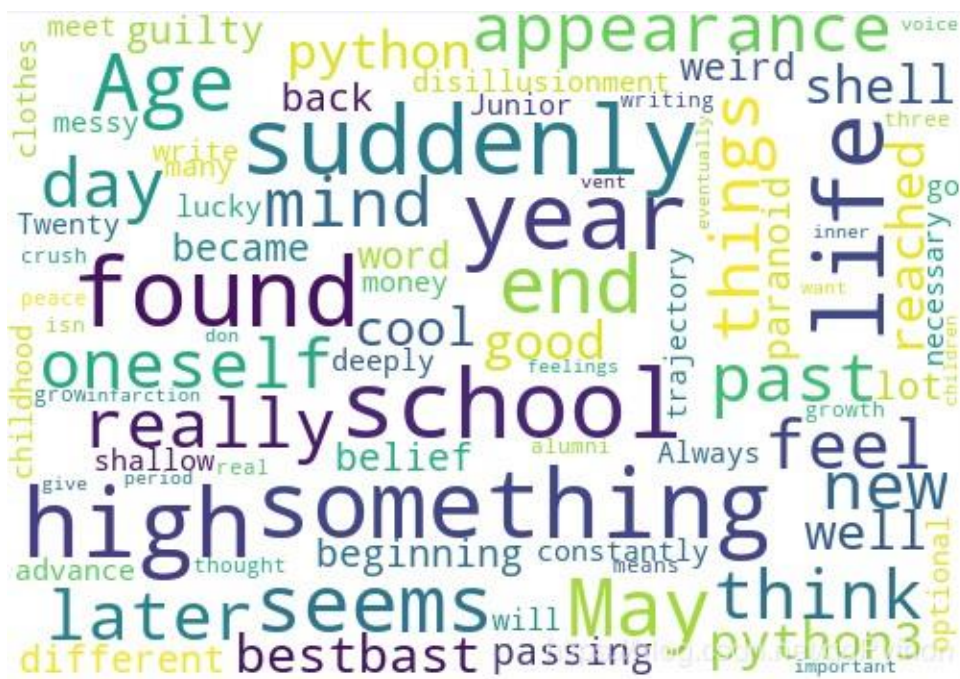
Task 3

Using the Twitter US Airline Sentiment file available [here](#), perform text analytics to understand the sentiments described within Tweets. You must perform appropriate pre-processing for text data and create a word cloud illustrating the frequency of the top 15 words used in each type of sentiment (negative, neutral, and positive, so 3 word clouds in total).

Next, build a simple sentiment analysis model (such as a Naive Bayes classifier or Logistic Regression) to predict the sentiment of the tweets. Remember to divide your data into training and testing sets appropriately.

Then, evaluate your model using appropriate metrics (e.g., accuracy, precision, recall, F1-score) and present these results in a well-structured confusion matrix.

Finally, based on the word frequency word clouds and the performance of your sentiment analysis model, provide a short text (max 200 words) summary of the findings and their implications.



Save your Anaconda / Colab Notebook File in **Your_Name_StudentNumber_Task3.ipynb** format.

Document your code and give a full explanation about what each block of code does.

(30 marks)

Individual Contribution (in completing Task2 and Task3) - 400 words maximum.

(10 marks)

Each group member must write individually about their contribution and reflection of learning in doing Task 2 and Task3. This word count is a requirement, and you must stay within 400 words, +/- 10% (40 words) to get full credit.

Submission

Task One should be named as Task_One_Firstname_Surname.pdf and must be submitted separately.

The names of all students in a group must be mentioned in their Task2 and Task3 submissions.

Individual Report should be named as – Ind_Report_Firstname_Surname.pdf

Zipped folder should be named as – Firstname_Surname.zip

Assessment Criteria

Each part will be graded according to the following criteria:

1. Quality of code (correctness and completeness) [Weightage – 40%]
2. Quality of documentation of code (explanation of each part of code and interpretation of results) [Weightage – 60%]

Note: Your work must not be copied. In case of any evidence of copying you will get 0 marks.

General Requirements for Students:

1. A proportion of assessment marks is allocated to presentation. All assignments must be word-processed, with word count noted unless otherwise stated by the lecturer.
2. Where a hardcopy submission is required, an Assignment Submission Form must be securely attached to each submission.
3. All assignments must be submitted no later than the stated deadline.
 - Assignments submitted after the latest deadline (date and time) specified, including any extension, are deemed to be 'late' and are penalised.
4. All relevant provisions of the Assessment Regulations must be complied with.
5. Extensions to assignment submission deadlines will be not be granted, other than in exceptional circumstances. To apply for an extension please go to <http://www.dbs-students.com/Registrar/> and download the Assignment Extension Request Form. *Once completed this form should then be returned to your Programme Leader, for approval.*
6. Students are required to retain a copy of each assignment submitted, and the submission receipt (If a physical submission is required) until the issuing of a transcript indicating the mark awarded.
7. Assignments must be appropriately packaged and presented.
8. Where a submission involves digital media, it is the submitting students' responsibility to ensure the media is appropriately labelled, fully working and they must retain a copy.
9. Assignments that *breach* the word count requirements will be penalised. *There is a 10% discretion, either way, applicable in terms of word count.*
10. Students are required to refer to the assessment regulations in their Student Guides and on the Student Website.
11. Dublin Business School penalises students who engage in academic impropriety (i.e. plagiarism, collusion and/or copying).
12. To prevent plagiarism please follow this link to the Harvard/OSCALA (delete as appropriate) Style Referencing Guide - all referencing is required in this format.

http://issuu.com/dbslibrary/docs/harvard-referencing-guide/1?mode=a_p

(Guide on referencing is also available under DBS library guides at www.library.dbs.ie)

13. In relation to electronic submissions:

- A. All assignments should be submitted to your subject/course page on Moodle by the deadline date.
- B. It is the student's responsibility to ensure their file is uploaded correctly.
- C. When an assignment is submitted, it is the student's responsibility to ensure that the file is in the correct format and opens correctly.
- D. When you submit your assignment you will be asked to click on a button which will declare the following:

By submitting this assignment I confirm that I am aware of DBS's policy regarding cheating, plagiarism and all other forms of academic impropriety. The coursework submitted is my own or my group's work, and all other sources consulted have been appropriately acknowledged. I am aware that in the case of doubt an investigation will be held.

- E. Include an electronic **cover sheet** with the following details to the front of the assignment:

Electronic Assignment Cover sheet

Please fill out and attach as the first page of Assignment.

Student (s) Number as per your student card:

Course Title:

Lecturer Name:

Module/Subject Title:

Assignment Title:

No of Words:

Note: Technical support is available to student between **0930- 1700 hrs only**. There is no technical support after 1700 hrs. It is your responsibility to ensure that you alshort time to troubleshoot any technical difficulties by uploading early on the due date.