

Assignment 2022–23

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First Sit
Version 1:
3/3/23

You will:

- Demonstrate proficiency in deploying machine learning tools in a Jupyter notebook environment.
- Demonstrate knowledge of the k -Nearest neighbours method.
- Demonstrate knowledge of *Principal Component Analysis*.
- Demonstrate knowledge of *Singular Value Decomposition*.

The submission for this assignment has two components: a single Jupyter notebook and a written report (in PDF). The assignment is worth 40% for MA5634/5663. You are required to submit both of these. The assignment itself consists of three tasks. These tasks must all be responded to in just one report and one notebook.

The written report should consist of a cover page plus **no more than five additional A4 sides, be written in a font size of no less than 10 point, and have margins of no less than 2cm all around**. The report may be handwritten or typed but it should be well-structured and legible. Grammar, structure, presentation and style will be taken into account in marking.

The jupyter notebook should be created from the template `assignment.ipynb` that is available for download from Brightspace. Also available for download from Brightspace are the TESLA stock price¹ data files `TSLAhistory.csv` and `TSLAupdate.csv` — needed for Task 3.

The notebook gives a detailed briefing on each of the three tasks as well as some code *THAT MUST NOT BE ALTERED*. This *untouchable* code sets up the task for you and also gives personalized parameter values that you must use in your submission.

Both components of your project should be submitted on Wise Flow by or before **11:00am UK Time (strict) on 17 May 2023**. **NOTE:** after 11:00am will be a *late submission*.

Misconduct in assessment is taken very seriously by the University. You are expected to abide by Senate Regulation 6 - Student Conduct (Academic and Non-Academic), which can be found here:

<https://www.brunel.ac.uk/about/administration/governance-and-university-committees/senate-regulations>. Advice on understanding what plagiarism and collusion are and how they can be avoided can be found here: <https://www.brunel.ac.uk/life/library/SubjectSupport/Plagiarism>

Grade Descriptors Over Page ...

¹1 March 2023: downloaded from | <https://finance.yahoo.com/quote/TSLA?p=TSLA>

Grade Descriptors: to achieve a grade in the range of an . . .

E (30-39%): you will have submitted a report and/or a notebook that addresses at least one of Tasks 1, 2 and 3 in a largely shallow, incomplete and/or incoherent way.

D (40-49%): you will have achieved at E grade level. Further, you will have submitted a report and a notebook that addresses at least one of Tasks 1, 2 and 3. For these tasks the report and notebook will have content clearly evidencing an attempt to meet the early parts of the task requirements. The written report will contain evidence that an effort was made to partially address those requirements.

C (50-59%): you will have achieved at D grade level. Further, you will have submitted a report and a notebook that addresses at least two of Tasks 1, 2 and 3. For these tasks the report and notebook will have content clearly evidencing an attempt to meet the early parts of the task requirements. The written report will be reasonably structured and presented with, possibly, some obvious flaws and/or omissions.

B (60-69%): you will have achieved at C grade level. Further, you will have submitted a report and a notebook that addresses all of Tasks 1, 2 and 3. For two of these tasks the report and notebook will have content clearly evidencing an attempt to meet the early parts of the task requirements. For the third task the report and notebook will clearly evidence that all requirements have been substantially met. The written report will be reasonably structured and presented with, possibly, some minor flaws and/or omissions.

A (70-89%): you will have achieved at B grade level. Further, you will have submitted a report and a notebook that addresses all of Tasks 1, 2 and 3. For all of these tasks the report and notebook will have content clearly evidencing an attempt to meet all parts of the task requirements. For at least one task the report and notebook will clearly evidence that all requirements have been substantially met. The written report will be well structured and presented with, possibly, some minor flaws and/or omissions.

A* (90-100%): Every aspect of your submission will be complete, correct and of near or full professional quality. It will meet all requirements in full.