University of Central Lancashire UCLan **Department of Computer Science**	**UCLan Coursework Assessment Brief**	2022-2023
	Module Title: Artificial Intelligence	
	Module Code: CO3519	Level 6
	Sentiment Analysis of Movie Reviews	This assessment is worth 50% of the overall module mark

THE BRIEF / INSTRUCTIONS

Summary

You need to implement and test a sentiment analysis model to classify movie reviews. The model should take a given movie review as it's input and classify it as either positive or negative. You should then produce a report detailing the development and testing of the model.

It is possible to determine whether a viewer will enjoy a movie by reading its reviews. Critics often use movie-rating websites to post reviews and rate movies. The attitude of critics can be determined by analysing their reviews. Based on the text of movie reviews, you will create a sentiment analysis model to classify them as positive or negative.

You will be using the Large Movie Review Dataset from the Kaggle, which contains 50,000 movie reviews. They are divided into 25,000 reviews for training and 25,000 reviews for testing. There are equal numbers of positive and negative reviews in both the training and testing sets.

Algorithms and Techniques

This Course Assessment gives you the opportunity to apply what you have learned in class to solve a given sentiment analysis task. Models for sentiment analysis can be developed using the following machine learning techniques:
• n-gram models • Decision tree classifier • Support vector classifier • Naive bayes classifier • K Neighbours classifier

It is important to note that you are not limited to using only the classifiers mentioned above.You can implement new models (algorithms) or variants of existing models for sentiment analysis. The latter can be more challenging but sometimes results in a publishable piece.

The Following Components Must Be Considered For Model Development And Validation

- Prepare a dataset for validation.
- Standardize, tokenize, and vectorize the data.
- Handle the reviews containing raw text (with punctuation and occasional HTML tags like <br/>).
- Evaluate the performance using accuracy and loss curves.

Preparation of the data, training and cross-validation techniques, evaluation of the test sets and model comparisons are all crucial to the success of this type of practical development.

Each student will present and demonstrate their 'practical development' during classes in the week 10/11.

Your demonstration must include the following:

- What method or algorithm are you proposing/using?
- If you are using any existing implementations, how will you use them and justify the reason of using it to solve the given problem? How you have planed to improve or modify such implementations?
- How will you evaluate your results? Qualitatively, what kind of results do you expect (e.g. plots or figures)? Quantitatively, what kind of analysis will you use to evaluate and/or compare your results (e.g. what performance metrics or statistical tests)?
- Discuss the result obtained from your model . Explain why they worked and what alternatives can be taken in the future to solve the given problem.

PREPARATION FOR THE ASSESSMENT

The preparation for this assignment is the weekly lab work that is set. This is provided on Blackboard, completed in class with the lecturer, and opportunities are given to discuss this work in the lecture times.

RELEASE DATES AND HAND IN DEADLINE

Assessment release date: 19th September 2022
Assessment deadline date and time: **3rd February 2023, 24:00 hours BST**

Please note that this is the <u>final</u> time you can submit – not <u>the</u> time to submit!
Your feedback / feed forward and mark for this assessment will be provided within 15 working days.

If you feel you need to apply for an extension/have mitigating circumstances you need to follow the correct university process detailed at https://www.uclan.ac.uk/students/support/extensions.php. Short-term extensions can only be approved if the application is made before the day of the deadline. If you have difficulties with this, please contact your Year Tutor.

SUBMISSION DETAILS

Final Report

The report should be 4-6 pages (excluding references). Your report should have the following structure:

- **Title, Author(s):** Title of the report. Your Name.
- **Introduction (10%):** Describe the problem you are working on, and an overview of your results.
- **Background Reading(10%):** Discuss published work that relates to this project. How is your approach similar or different from others?
- **Data (10%):** Describe the data you are working with for your project. What type of data is it? Where did it come from? How much data are you working with? Did you have to do any preprocessing, filtering, or other special treatment to use this data in your project? If you are collecting new data, how will you do it and incorporate into your model?
- **Model Development (30%):** Discuss your approach for solving the given problems. Why is your approach the right thing to do? Did you consider alternative approaches? You should demonstrate that you have applied ideas and skills built up during the semester to tackling the given problem. It may be helpful to include figures, diagrams, or tables to describe your method.
- **Model Evaluation (30%):** Discuss the experiments that you performed to demonstrate that your approach solves the problem. You might compare with previously published methods, perform an ablation study to determine the impact of various components of your system, experiment with different hyperparameters or architectural choices, use visualization techniques to gain insight into how your model works, discuss common failure modes of your model, etc. You should include graphs, tables, or other figures to illustrate your experimental results.
- **Conclusion (10%) :** Summarize your key results - what have you learned? Suggest ideas for future extensions or new applications of your ideas.
- **Supplementary Material:** Not counted toward your 4-6 page limit. Your supplementary material must include:
  - Source code of your project
  - Any relevant supporting materials E.g. Link to Cool videos of your work, interactive visualizations, demos, etc.
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Please submit your Final Report as a PDF on Blackboard using the link "Assessment 1 submission" by the deadline. The link can be found by clicking "Assignments" on the left navigation panel in blackboard. Upload your **Supplementary Material** in a Cloud Source Repository and **include the URL in your final report**.

The practical development must be **individual work**. This cannot be completed as a group. **Students must write and submit their own individual final report.** You can discuss solutions with other students, and ask for help from your lecturer if needed.

Honor Code

You should clearly cite your sources if you would like to incorporate ideas and code from papers, books, online references, or publicly available implementations into your strategy or algorithm. It is prohibited, however, to look at or integrate another group's code.

LEARNING OUTCOMES ASSESSED BY THIS WORK

- Apply the theoretical underpinnings of algorithms and techniques specific to artificial intelligence.
- Critically evaluate the principles and algorithms of artificial intelligence.
- Evaluate the theoretical foundations of artificial intelligence.
- Understand some of theoretical underpinnings of computing and apply them to given scenarios

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MARKING CRITERIA

Grade band	Marks available	A description of work example
3rd class	42	The report lists all tasks undertaken. There may be a few inaccuracies but most will be correct. Writing may be brief, or poorly presented. Some items might be in bullet points rather than full sentences.
	45	As above, but nearly all descriptions will be correct, though perhaps only explained briefly.
	48	As above, but all descriptions will be correct.
2:2	52	The report lists all tasks undertaken, using the correct technical terms to explain the techniques used and why. At least most of the tasks will be correctly explained, although some parts may be incomplete.
	55	As above, but nearly all descriptions will be explained using technical details.
	58	As above, but all descriptions will be explained using correct technical details.
2:1	62	The report lists all tasks undertaken, explaining in detail the technique used and why. At least most of the tasks will have a detailed and clear explanation, demonstrating understanding of the topics. The work will be presented in a professional, structured manner and may include simple references.
	65	As above, but nearly all of the tasks will have a detailed and clear explanation.
	68	As above, but all of the tasks will have a detailed and clear explanation.
1st class	74	All tasks will have a detailed and clear explanation which demonstrates full understanding of the topic. There may be a few slight errors or minor missing details.
	80	As above, but of good quality throughout, without obvious errors or missing details.
	87	As above, but showing evidence of background reading through appropriate citing of sources. Discussed the result obtained from the model. Explained why it worked and what alternatives can be taken in the future to solve the given problem.
	94	As above, but ensuring that sources are of a good quality and used throughout the work.
	100	provides evidence of thorough independent research and development. Algorithms and techniques are tailored to the use case, and explanation of how and why this was done is provided. The submitted material makes it easy for a developer or user with a disciplinary background in computing to validate, test, employ, and further develop the code

Please note that this is just an example, and marks can be adjusted using academic judgement of the overall standard of work.

Late work
Late work can be submitted within 5 working days of the deadline for a maximum grade of 40%. Except where an extension of the hand-in deadline date has been approved, work submitted after this time will receive a mark of 0%.

HELP AND SUPPORT

- Support will be provided via Microsoft Teams and email. You will also have the opportunity to ask questions during lectures / labs. You may request a one to one meeting with a tutor during their office hours (as published on Starfish).
- For support with using library resources, please contact our subject librarian subjectlibrarians@uclan.ac.uk. You will find links to lots of useful resources in the My Library tab on Blackboard.
- If you have not yet made the university aware of any disability, specific learning difficulty, long-term health or mental health condition, please let us know. The Inclusive Support team will then contact you to discuss reasonable adjustments and support relating to any disability. For more information, visit the Inclusive Support site.
- To access mental health and wellbeing support, please complete our online referral form. Alternatively, you can email wellbeing@uclan.ac.uk, call 01772 893020 or visit our UCLan Wellbeing Service pages for more information.
- If you have any other query or require further support you can contact The Student Support Centre. Speak with us for advice on accessing all the University services as well as the Library services. Whatever your query, our expert staff will be able to help and support you. For more information, how to contact us and our opening hours visit Student Support Centre.
- If you have any valid mitigating circumstances that mean you cannot meet an assessment submission deadline and you wish to request an extension, you will need to apply online prior to the deadline.