Xi'an Jiaotong-Liverpool University
西交利物浦大学

XJTLU Entrepreneur College (Taicang) Cover Sheet

Module code and Title	**DTS201TC Pattern Recognition**
School Title	**School of AI and Advanced Computing**
Assignment Title	**Coursework (Groupwork)**
Submission Deadline	**23:59, 29th Oct.**
Final Word Count	**NAN**
If you agree to let the university use your work anonymously for teaching and learning purposes, please type **"yes"** here.	

I certify that I have read and understood the University's Policy for dealing with Plagiarism, Collusion and the Fabrication of Data (available on Learning Mall Online). With reference to this policy I certify that:

- My work does not contain any instances of plagiarism and/or collusion.
- My work does not contain any fabricated data.

By uploading my assignment onto Learning Mall Online, I formally declare that all of the above information is true to the best of my knowledge and belief.

Scoring – For Tutor Use	
Student ID	

Stage of Marking	**Marker Code**	**Learning Outcomes Achieved (F/P/M/D) (please modify as appropriate)**				**Final Score**
		A	**B**	**C**	**D**	
1st Marker – red pen						
Moderation – green pen	**IM Initials**	The original mark has been accepted by the moderator (please circle as appropriate):				Y / N
		Data entry and score calculation have been checked by another tutor (please circle):				Y
2nd Marker if needed – green pen						

For Academic Office Use			**Possible Academic Infringement (please tick as appropriate)**	
Date Received	**Days late**	**Late Penalty**	☐ **Category A**	Total Academic Infringement Penalty (A,B, C, D, E, Please modify where necessary) _____
			☐ **Category B**	
			☐ **Category C**	
			☐ **Category D**	
			☐ **Category E**	

The assignment must be submitted via Learning Mall Online to the correct drop box. Only electronic submission is accepted and no hard copy submission. All students must download their file and check that it is viewable after submission. Documents may become corrupted during the uploading process (e.g. due to slow internet connections). However, students themselves are responsible for submitting a functional and correct file for assessments.

A comparative study of PR models

Assessment Task:

Compare multiple PR (Pattern Recognition) algorithms by implementing the classification task on a Remote Sensing dataset. The dataset download link will be provided on LMO.

Requirements:

1. You are expected to implement classification/clustering models , to which end, you need to understand and explain your models, manage and analyze the dataset and its features, implement the models, make evaluation and analysis.
2. The programming language should be **Python**.
3. You are free to use any PR/DL models. The percentage of DL models' usage should not exceed 50%.
4. The minimum number of implemented models is two.
5. The assessment includes both report and the codes.
6. Individual mark is decided by groupwork mark and peer assessment mark. The formula is shown below.

$$\begin{aligned}\text{Final Grade} = &\text{ Peer Assessment Weight} * \text{Student Contribution} * \text{Group Grade} \\ &+ (1 - \text{Peer Assessment Weight}) * \text{Group Grade}\end{aligned}$$

   where, the *Student Contribution* is calculated by LMO Peer Assessment activity.

7. Assessment
   - The second part of the group work marks(marking criteria 2) would be total marks of all models divided by the number of models.
   - If 0 models are submitted, the total marks would be 0.
   - Quality is valued more than quantity.
     - Quality refers to whether the models are implemented well with good understanding and proper illustration in the report.
     - Quantity refers to number of the models, length of report.
   - Code submitted should be able to run properly and the results should align with the report. At least one *.ipynb* should be included displaying the output of your models.
   - If a model's implementation is referred to online resources, e.g., github, to a great extent, it should be clearly and formally noted in reference. Otherwise, it would be suspected as plagiarism, and therefore the marks for this model could be 0.
   - If a model's implementation is referred to online resources, e.g., github, but you have contributions to it to improve the model, it should also be clearly and formally noted in reference. And you contributions should also be noted.

- The baseline classification accuracy is 60%, the performance (efficiency/accuracy) of a model will not be additionally evaluated as long as it is above the baseline. The choice of library is not within the evaluation.
- The mark of the groupwork consists of 3 components, shown in detailed marking rubrics below.

Marking Criteria:

(1). [40 marks] Investigating the dataset.

Table 1: Marking Rubric 1

Rubrics	**Marks**	**Details**
Dataset description	15	5 marks: dataset description
		5 marks: visualization
		5 marks: proper references
Feature selection	10	5 marks: possibility of using feature selection methods
		5 marks: explanation
Feature analysis	15	5 marks: feature extraction methods
		5 marks: investigate and experiment on the data
		5 marks: demonstrate the features with figures(numbers), plots or tables

(2). [40 marks] Description of the models, parameters, and evaluation on the performance over the model.

Table 2: Marking Rubric 2

Rubrics	**Marks**	**Details**
Description	10	5 marks: workflow
		5 marks: model description (e.g., theory, functionality, etc.)
Implementation	20	5 marks: include model parameters estimation procedure
		5 marks: training procedure description
		5 marks: introduce the hardware you use (e.g., CPU, GPU, RAM, etc.)
		5 marks: codes can run properly and the results align with report
Evaluation	10	5 marks: demonstrate results with figures(numbers)
		5 marks: demonstrate results with plots or tables

(3). [20 marks] Comprehensive analysis.

Table 3: Marking Rubric 3

Rubrics	**Marks**	**Details**
Discussion	10	5 marks: pros&cons of the models
		5 marks: reason
Conclusion	5	a short summary on orientation of the work, how you did it, what results you got, and possbile improvement in future
Novelty	5	originality or creativity

Note: for each item in the tables above, the work will be marked with the standard below:

- excellent = 5 mark
- good = 3 marks
- fair = 1 marks
- poor = 0 marks

misuse of generative AI tools - the level of "poor"

1 Peer Assessment [weight : 20%]

Table 4: Peer Assessment Rubrics

MARKS	5	4	2	0
Contributions	Rountinely provides useful ideas when participating in the group discussion. A leader who contributes a lot of effort.	Usually provides useful ideas when participating in the group discussion. A strong group member who tries hard.	Sometimes provides useful ideas when participating in the group discussion. A satisfactory group member who does what is required.	Rarely provides useful ideas when participating in the group discussion. May refuse to participate.
Problem solving	Actively looks for and suggests solutions to problems.	Refines solutions suggested by others.	Does not suggest or refine solutions, but is willing try out solutions suggested by others.	Does not try to solve problems or help others solve problems. Lets others do the work.
Focus on the task	Consistently stays focused on the task and what needs to be one. Very self-directed.	Focuses on the task and that needs to be done most of the time. Other group members can count on this person.	Focuses on the task and what needs to be done some of the time. Other group members must sometimes nag, prod, and remind to keep this person on task.	Rarely focuses on the task and what needs to be done Lets others do the work.
Working with others	Almost always listens to, shares with, and supports the efforts of others. Tries to keep people working well together.	Usually listens to, shares with, and supports the efforts of others. Does not cause "waves" in the group.	Often listens to, shares with, and supports the efforts of others, but sometimes is not a good team member.	Rarely listens to, shares with, and supports the efforts of others. Often is not a good team player.