DESCRIPTION OF COURSEWORK

Course Code	G0191
Course Name	Face Recognition With Machine Learning
Lecturer	WANG HAN
Academic Session	202402
Assessment Title	PCA in face recognition

A. Introduction/ Situation/ Background Information

B. Course Learning Outcomes (CLO) covered

At the end of this assessment, students are able to:

CLO 1	Analyse PCA (Principal Component Analysis)
CLO 2	Discover the concept of PCA in Face Recognition
CLO 3	Associate basics of Classification methods
CLO4	Build the knowledge of PCA and classification into human face recognition

C. University Policy on Academic Misconduct

1. Academic misconduct is a serious offense in Xiamen University Malaysia. It can be defined as any of the following:
   i. **Plagiarism** is submitting or presenting someone else's work, words, ideas, data or information as your own intentionally or unintentionally. This includes incorporating

published and unpublished material, whether in manuscript, printed or electronic form into your work without acknowledging the source (the person and the work).

ii. **Collusion** is two or more people collaborating on a piece of work (in part or whole) which is intended to be wholly individual and passed it off as own individual work.

iii. **Cheating** is an act of dishonesty or fraud in order to gain an unfair advantage in an assessment. This includes using or attempting to use, or assisting another to use materials that are prohibited or inappropriate, commissioning work from a third party, falsifying data, or breaching any examination rules.

2. All the assessment submitted must be the outcome of the student. Any form of academic misconduct is a serious offense which will be penalised by being given a zero mark for the entire assessment in question or part of the assessment in question. If there is more than one guilty party as in the case of collusion, both you and your collusion partner(s) will be subjected to the same penalty.

D. Instruction to Students

See section F.

E. Evaluation Breakdown

No.	Component Title	Percentage (%)
1.	REPORT	50
2.	PRESENTATION	10
3.		
4.		
5.		
	TOTAL	**60**

F. Task(s)

Description of project:

Design and implement a human face recognition system that can recognize a person. You may collect 100+ faces from your group and others and build the face database with the PCA approach. For training, the face images are typically from 100x100 to 300x250.

The face detection algorithm from OpenCV/Python/MATLAB/C++ can be called, providing face location and size. The detected faces will be resized to the same size as you did during the training process. You may use image enhancement techniques to improve face image quality. The pre-processed face will then be fed into the recognition program that you have designed for recognition.

Assessment:

1. The database should contain a minimum of 100 faces, one mark will be deducted for one face short. Each cropped face image should be named with the person's name. Or an index file can be used to identify each face.
2. The database must have more than 20 people.
3. During the demonstration/presentation, you should show the ability of face recognition of the program with PCA. For example, by giving a new face (not trained in the database), the program should be able to tell the name of this face. Note that error is allowed.
4. Maximum of 10 images are allowed for each team member.
5. The CA comprises of one report for each team. The report should have details of the algorithm design/list/test results, and performance analysis. There is no page limit. Everyone must submit the report via Moodle. Identify individual contributions in the report.

APPENDIX 1

MARKING RUBRICS

Component Title					Percentage (%)		
Criteria	Score and Descriptors					Weight (%)	Marks
	Excellent (5)	Good (4)	Average (3)	Need Improvement (2)	Poor (1)		
Introduction	Excellent introduction with all the necessary information, well-defined objective and clear description of topic under study.	Good introduction with most of the necessary information, defined objective and clear description of the topic under study.	Moderate introduction with some information on the topic	Weak introduction with limited information about the topic.	Irrelevant introduction.	25	25
Content	Very rich content which covers more than expected.	Rich content which covers almost all aspects of the topic.	Content sufficiently illustrates the topic.	Content is weakly relevant to the topic.	Content is not relevant to the topic.	25	25
Difficulty Level	The level of difficulty far exceeds what is expected from this course.	The level of difficulty slightly exceeds what is expected from this course.	The level of difficulty is comparable to what is expected from this course.	The level of difficulty is below what is expected from this course.	The level of difficulty is far below what is expected from this course.	25	25
Discussion and Conclusion	Interesting discussions are presented, which are logically correct and involve a lot of new ideas. Conclusions give rise to new theories or findings.	Discussions are logically presented, which involve some new ideas. Conclusions are correct.	Sufficient logically correct discussions are presented, with correct conclusions.	Some discussions are presented, some are not logically correct. Some conclusions are presented.	Very few discussions and no conclusion; or all discussions are irrelevant or logically incorrect.	25	25
					TOTAL	100	100

Note to students: Please print out and attach this appendix together with the submission of coursework