



could be trained
to retrieve
therapy method
VPA would
The
intelligence
do
ent

12 Pages

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over the label provided and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners cannot read illegible script or have it typed and the expense of typing will be charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

1	Student Number	2304714
2	Title of Examination Paper	ARTIFICIAL INTELLIGENCE
3	Module Code	ACCA 7026
4	Date and Time of Examination	May 8. 2024
5	Examination Venue	1A310
6	Seat Number	018
7	Number of Answer Books handed in	1

List the numbers of the questions you have attempted	Office Use
1	14
3	17
4	16.5
Total	47.5

(Gweler yr ochr arall am y fersiwn Cymraeg)

59.38%

(14)

1.1 In clinical assistance, Weak AI could be trained by the data of patient records and retrieve medical information, the label could be therapy method regarding to the situation. So that, the VPA would be able to help staff here making decision. The Strong AI is able to deal with any intelligence tasks with human-level cognitive, so it can help VPA build any function that would be help patient.

1.2 In Clinical assistance, Weak AI could be trained by the data of patients symptoms and the therapy method, so that they could make decision about how to treat a new patient according to one's records or medical information.

1.3 In patient support, Strong AI would be able to arrange any appointments with human-level cognitive. It is possible to make these appointments no conflicts and effective, what is more important is the Strong AI could be arrange these appointments by order of the patient's symptoms, and cope with any emergency situation.

1.4 In patient support area.
Performance means patient can make appointments, receive medication remind, monitoring the health situation of oneself, and access to health information and resources.

Environment: information of patient, resources of VPA.

Actuators: the AI system, staff of VPA.

Sensors: the application of VPA, needs of patient.

1.5 Regarding to respect of human-autonomy, the doctors and experts also have right to make ~~some~~ their decisions. For fairness, the AI system shouldn't ~~have~~ any bias concepts on any patients.

For prevention of harm, the ~~decision~~ made by AI should be safety and ~~accountability~~.

For explicability, the decision made by AI should provide reason and let patient understand.

For privacy and security, the data and information of patient couldn't be known by anyone else.

Need to specify
in turn of week / strong AD

14

20

3.1 $UCB(i) = (V_i) + C \sqrt{\frac{\ln N}{n_i}}$
 $= 0.8 + 1.5 \times \sqrt{\frac{\ln 80}{15}}$
 ≈ 1.61

8/8

3.2.1 The most suitable learning mechanism is supervised learning which is because supervised learning can learn from the ~~reward~~ ^{past} habit of ~~can~~ customer in the past. so when a transaction happen and it is ~~not~~ ^{not} weird, it could be alarm about the transaction and ~~can~~ get the ~~can~~ customer in touch to check the transaction.

3.2.2 Unsupervised learning suitable for this task. Unsupervised learning is able to collect the same tasks in one group according the features they have.

3.2.3 Supervised learning. Because supervised learning could learn from the records of customers and ~~analyse~~ ^{analyse} their habit of spent money, so it could be recommend goods the ~~can~~ customers need.

3.24 Reinforce learning. Because reinforce learning could get a goal by maximize the reward step by step so it is suitable for this task.

4.1 Evaluating the size of data then design the model according to the content of the data size and the size of parameters. Last but not least choose suitable activation function and to optimizing the model.

4.2.1 [500, 8]

4.2.2 0

4.2.3 1. The ~~data~~ numbers of column that missing value is very small.

2. The column that missing value is 42 random in data.

4.3 Because the output is 0 or 1, so it can be considered as a Binary-classification task.
ANN model, loss function, optimizer, sigmoid function.

4.4 Sigmoid function, which will output a possibility of the student admission.

4.5 The model perform well in training data, but not perform well in new data. The model not work when it meet the data it never seen, the model would remember the training data.

4.6.1 TP = 150

FP = 30

FN = 15

IN = 5

$$4.6.2 \quad \text{Precision} = \frac{TP}{TP+FP} = \frac{150}{130+50} = \frac{150}{180} \approx 0.8333$$

$$\text{Recall} = \frac{TP}{TP+FN} = \frac{150}{150+15} = 0.9677$$

$$F1\text{-Score} = \frac{2 \times \text{Precision} \times \text{Recall}}{\text{Precision} + \text{Recall}} = \frac{1.612}{1.801} = 0.8950$$

$$\text{Recall} = \frac{TP}{TP+FN} = \frac{150}{150+15} \approx 0.9090$$

$$F1\text{-Score} = \frac{2 \times \text{Precision} \times \text{Recall}}{\text{Precision} + \text{Recall}} = \frac{1.515}{1.742} \approx 0.8697$$

explanation please.

$$\frac{1875}{40}$$