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Examination Answer Books

12 Pages

Instructions to Candidates

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3. The answers must be legibly written. The Examiners can read in any legible script or have it typed and the expense of typing charged to the candidate.
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1	Student Number	2001127
2	Title of Examination Paper	Artificial Intelligence Machine Learning
3	Module Code	ACCAG011
4	Date and Time of Examination	8/11/24 9AM
5	Examination Venue	
6	Seat Number	007
7	Number of Answer Books handed in	

[illegible]

(Gweler yr ochr arall am y fersiwn Cymraeg)

Complete, fold and seal
(see note 2 below)

SURNAME: Aguilera

FORENAME(S): Geminiano III

Total	

6/75

$$\frac{06}{75} = \underline{\underline{8\%}}$$

2

1 1/2
7

2.9) A local search method is a method that searches for similar algorithms so that data can be transformed into the desired result. The key idea involved using the hill climbing local search method is that the algorithm searches for similar data and adapts accordingly. Additionally, it considers the structure of data so that it reads data and provides an input. Appropriate to overcome any shortcomings is essential. This is because the hill climb local search method can provide insufficient results. This is due to the innacuracy of the algorithm.

1 1/2
7

2.10) Pseudo-code

0/4

0/4

function matchin ()

{

string name1

string name2

myArray ['name1', 'name2'];

FOR (int i = 0; i < 2; i++)

print (name1 == name2)

}

From the pseudo-code above, a string name1 and another string name2 is defined in a function. An array was created to store the variable. A for loop was used to loop through the array. Name1 == to name2. The code implies that the string name1 is equal to name2.

$$2c) x = a, b, c, d, e, f, g, h$$

$$\text{parent 1} = 1 \downarrow 4 \downarrow 3 \downarrow 8 \downarrow 5 \downarrow 4 \downarrow 1 \downarrow 9$$

$$\text{parent 2} = 3 \downarrow 7 \downarrow 4 \downarrow 1 \downarrow 9 \downarrow 6 \downarrow 3 \downarrow 2$$

$$\frac{112}{6}$$

The crossover operation on parent 1 and parent 2

$$\text{child 1} = 1 \downarrow 4 \downarrow 4 \downarrow 8 \downarrow 5 \downarrow 4 \downarrow 1 \downarrow 9$$

$$\text{child 2} = 3 \downarrow 7 \downarrow 3 \downarrow 8 \downarrow 9 \downarrow 6 \downarrow 3 \downarrow 2$$

The values were swapped before the ~~end~~ each end point.

$$2d) P(x) = (a+b) - (c-e+d) - g + f + h$$

$$\frac{0}{8}$$

if both of the offspring were used in the function above, the fitness of each of the offspring is high. This is because the end point was only $2/8$ meaning that only a quarter of the values needed to be swapped. This makes the algorithm faster to run meaning that less resources are being used making the operation efficient.

The value of the chromosome's gene alleles would be $2/8 + 10$. This is because the number of possibilities that both values can swap is 10 values.

$$\frac{3}{25}$$

$$\frac{3}{25}$$

3

3a) In machine learning, supervised learning refers to the training of data with assistance. Pre-set data is used in supervised learning to help the machine read patterns and data with help from another machine or a human. Unsupervised learning is where the machine is more independent and it is not given data to learn. Unsupervised learning solves problems by itself and it is often rewarded when making the right decision.

Supervised learning

- The machine is trained to identify patterns in a given data set. The machine has been trained prior.

Unsupervised learning

- The machine figures out everything by itself. The machine is rewarded for making the correct decision. This will enable the machine to learn future patterns.

3b) The synaptic weights shown on the diagram are used to determine the probability, which provides a value to be further calculated.

ReLU is sometimes preferred to a logistic function because of its properties and attributes. These include data privacy, supervised machine learning. ReLU is trained with assistance meaning that data and results are more accurate. Data accuracy and efficiency are the key factors of ReLU that make it a logistic function.

3d)

ReLU is trained with assistance meaning that data and results are more accurate. Data accuracy and efficiency are the key factors of ReLU that make it a logistic function.

$\frac{3}{25}$

Q35 3/25

4

- 4a) The procedure involved in the operation of a fuzzy logic expert system is that it identifies patterns and similarity in a given data set. It looks for data that is similar by comparing the values and tries to match them.

0/4

- 4b) Two defuzzification techniques is comparing values and ~~joining~~ joining values together. A method to choose in real time would be joining values together. This is because values that are joined together will inherit each others properties making both values more alike.

0/3

- 4c) The level of confidence score for a positive diagnosis;

0/18

0/18

3

- 3c) $x_1 = 0.9$, $x_2 = -0.42$, $x_3 = 0.02$

$$\phi(y) = \frac{1}{1+e^{-y}}$$

=

0/25

$$\phi(y) = 0.9 + (-0.42) + 0.02$$

$$= 0.512$$

$$\phi(y) = \frac{0.512}{1+e^{-y}} = 0.83562$$