Jessica Braganza
F171121S1
BE Comp 2

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SCOA Assignment 2

1) Explain neuro fuzzy hybrid, neuro genetic hybrid and fuzzy genetic hybrid system?

Ans a) Neuro Fuzzy Hybrid System :

A system that determines its parameters by processing data samples with the help of a learning algorithm takes from neural network theory.

A hybrid intelligent system that integrates ANN and fuzzy logic useful in performing mapping with some degree of impression.

Easy to conceptualize and user friendly way to design non-linear controllers large amount of academic research is also available.

b) Neuro - genetic Hybrid System :

Genetic algorithm are used to encode the parameters of neural networks on a large scale string of properties of a network. i.e. chromosomes is generated.

CIR-NN are capable of locating the neighbourhood of the optimal solution, generates better population from good parents.

Used in face - recognition, animal controls, etc.

c) Fuzzy Genetic Hybrid System :

We use genetic algorithms to develop the best optimized set of rules to be used for fuzzy inference systems.

Regular use of GA is in fuzzy classification systems.

In this system, an object is considered and classified on the basis of the linguistic values of the object attributes.

The challenging task is to find out appropriate set of fuzzy rules.

2) Define bias and threshold.

Ans. Bias -

When calculating the output of a value, the inputs are multiplied by weights and a bias value is added to the result.

The bias allows the activation function to be shifted to left or right, to better fit the data.

Biases only influence the output values, it doesn't interact with the actual input data.

Threshold -

It is a peak value on a break through point after which certain specific actions are performed by the models.

3) Write short note on important terminologies on ANN.

Ans. 1) The terminologies in ANN are :

(i) Node / unit / cell

(ii) Connection / edge / link

(iii) Connection strength / weight

(iv) Node output

2) The input to the network are represented by the mathematical symbol x_n.

3) Each of these inputs are multiplied by a connection weight, w_n.

$$\text{Sum} = w_1 x_1 + w_2 x_2 + \dots + w_n x_n$$

4) These products are simply summed, fed through the transfer function to generate a result and then output.