

4/6/2012

SEM (R) - Comp - Soft computing

WS
Con. 4679-12.

(REVISED COURSE)
(3 Hours)

GN-9047
[Total Marks : 100

- N.B. : (1) Question No. 1 is compulsory.
(2) Attempt any four questions out of the remaining.
(3) Figures to the right indicate full marks.

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| 1 | A. Explain fuzzy extension principle with the help of an example. | 06 |
| | B. Explain Mc Culloch Pitts Neuron Model with help of an example. | 06 |
| | C. Explain standard fuzzy membership functions. | 08 |
| 2 | Design a fuzzy logic controller for a domestic washing machine with two Inputs dirtiness of the load and weight of the laundry and output as amount of detergent used. Use five descriptors for each linguistic variable. Generate a set of rules for control action and defuzzification. | 20 |
| 3 | A. What is learning in Neural Networks? Compare different learning rules. | 10 |
| | B. Explain error back propagation training algorithm with the help of a flowchart. | 10 |
| 4 | A. Determine the weights after one iteration for hebbian learning of a single neuron network starting with initial weights $w = [1, -1]$, inputs as $X1 = [1, -2]$, $X2 = [2, 3]$, $X3 = [1, -1]$ and $c = 1$.
Use (i) Bipolar binary activation function
(ii) Bipolar continuous activation function | 12 |
| | B. Explain Perceptron Learning with the help of an example. | 08 |
| 5 | A. Explain with examples linearly separable and non-linearly separable pattern classification. | 10 |
| | B. Explain the three types of Fuzzy Inference Systems in detail. | 10 |
| 6 | A. Explain Travelling Salesperson Problem using Simulated Annealing. | 10 |
| | B. Explain RBF network and give the comparison between RBF and MLP. | 10 |
| 7 | Write notes on any two of the following | 20 |
| | A. Derivative based Optimization method of steepest descent | |
| | B. Learning Vector Quantization | |
| | C. ANFIS Application - Printed Character Recognition | |
| | D. Kohonen's Self Organizing Network | |