B. Tech Degree VII Semester (Supplementary)Examination July 2010

IT/CS/EC/EI/EB 705 (C) ARTIFICIAL NEURAL NETWORKS

(2002 Scheme)

Time : 3 Hours Maximum Marks : 100

I. (a) Compare biological and artificial neural networks. (5)

(b) Explain the algorithm of Hebb net with its architecture. (5)

(c) Using the perceptron learning rule, find the weights required to perform the following classification. Vectors (1 1 1 1), (-1 1 –1 –1) and (1 –1 –1 1) are members of class (having target value 1) and vectors (1 1 1 –1) and (1 –1 –1 1) are not members of class (having target value –1). Use learning rate of 1 and starting weights zero. (10)

OR

II. (a) Explain the algorithm used for training perceptron network. (7)

(b) Define linear seperability. (5)

(c) Form a Hebb net to classify the given two dimensional i/p patterns.

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. x x x .          x x x x x
x . . . x          x . . . .
x x x x x   and    x x x x x
x . . . x          x . . . .
x . . . x          x x x x x
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(A) (E) (8)

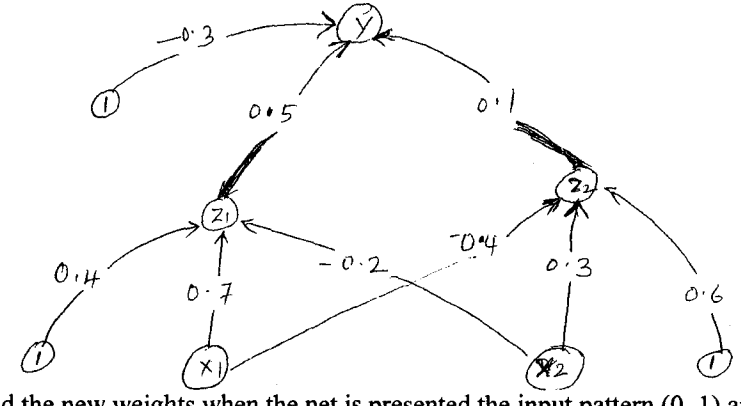
III. (a) Explain the architecture of a back propagation network. (10)

(b) How is data compression achieved using back propagation. (10)

OR

IV. (a) How is error back propagated in BPN? (8)

(b)



Find the new weights when the net is presented the input pattern (0, 1) and the target output is 1. Use a learning rate of $\alpha = 0.25$ and binary sigmoid activation function. (12)

(P.T.O.)

V. (a) Draw and explain the architecture of a full counter propagation network. (12)

(b) Differentiate between Kohoren and Grossberg learning rules. (8)

OR

VI. (a) Full CPN is more efficient that forward only CPN. Justify. (10)

(b) Explain the training and application algorithm used for forward only CPN. (10)

VII. (a) What is simulated annealing? Explain in detail the method used in simulated annealing. (10)

(b) Explain the architectural diagram and features of Boltzmann net. (10)

OR

VIII. (a) Explain the learning algorithm used in Boltzmann machine. (10)

(b) Explain the structure of a simulated annealing algorithm. What are its applications. (10)

IX. (a) A hetero associative network is given. Find the weight matrix and test the network with training input vectors.

s_1	=	(1, 1, 0, 0)	t_1	=	(1, 0)
s_2	=	(0, 1, 0, 0)	t_2	=	(1, 0)
s_3	=	(0, 0, 1, 1)	t_3	=	(0, 1)
s_4	=	(0, 0, 1, 0)	t_4	=	(0, 1)

(12)

(b) What is pattern association? What are its applications? (8)

OR

X. (a) Using Hebb rule of discrete BAM, find the weight matrix to store the following input-output pattern pairs :

s_1	=	(1, 1, 0,)	t_1	=	(1, 0)
s_2	=	(0, 1, 0,)	t_2	=	(0, 1)

(10)

(b) Explain the architectural features of ART networks. (10)

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