Take Test: Quiz 8.1

Test Information

Description	This quiz is designed to assess your understanding of the concepts presented in recorded lectures 8.1 and 8.2.
Instructions	You should complete this quiz after viewing the recorded lectures 8.1 and 8.2.
Multiple Attempts	This test allows 2 attempts. This is attempt number 1.
Force Completion	This test can be saved and resumed later.

QUESTION 1 **4 points** Save Answer

If one wanted to incorporate a bias in a recurrent network, then the appropriate matrix/vector representation of the dynamical system in such a network is given by:

- ○ $x_{k+1} = Wx_k + \theta$ where $\theta^T = (\theta 1, \theta 2, \ldots, \theta n)$
- ○ $x_{k+1} = F_h [Wx_k + \theta]$ where $\theta^T = (\theta 1, \theta 2, \ldots, \theta n)$
- ○ $x_{k+1} = W(x_k + \theta)$ where $\theta^T = (\theta 1, \theta 2, \ldots, \theta n)$
- ○ $x_{k+1} = F_h [W(x_k + \theta)]$ where $\theta^T = (\theta 1, \theta 2, \ldots, \theta n)$

QUESTION 2 **3 points** Save Answer

In a recurrent neural network of size *n* with no self-connections and where each arc connects two nodes in both directions (the connections are symmetric), there are how many connections?

- ○ $n(n-1)/2$
- ○ n^2
- ○ $n^2 - n$

Question Completion Status:

Hebbian Learning refers to

- ◯ the notion that a neuron is affected by nearby neurons and attempts to form a cooperative or reinforcement function for those nearby neurons.
- ◯ how neurons affect other neurons.
- ◯ how neurons seek to mimic the behavior of other neurons.

QUESTION 4

3 points Save Answer

In Hebbian networks, or recurrent neural networks with binary state values, the weight matrix formed by the outer product of an exemplar creates an n x n matrix where n is the size of the exemplar vector. The operation that zeros out the diagonal elements is necessary because

- ◯ This prevents self-reinforcement of a node's state.
- ◯ Otherwise the matrix/vector multiplication would produce an impossible state vector.
- ◯ The diagonal entries correspond to the exemplar.

QUESTION 5

2 points Save Answer

The hard limiting function applied to the result of the multiplication of the weight matrix and the state column vector where this vector is comprised of binary values maps the vector entries to either a 0 or a 1.

- ◯ True
- ◯ False

QUESTION 6

2 points Save Answer

In a Hebbian recurrent neural network heat death occurs because

- ◯ the network provides either reinforcement or the lack of reinforcement.
- ◯ the network encompasses inhibition.

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers Save and Submit