

COMP4302/COMP5322 NEURAL NETWORKS

Exam information

Exam

- 2 hours, 50 marks
 - To pass the course a minimum of 20 marks at the exam is required
- You are allowed to bring
 - One double-sided A4 page of your own notes
 - you must leave it with your exam paper
 - Non-programmable calculator
- Genetic algorithms and Matlab will not be examinable
- Reminder
 - Check location of exam before the day
 - Arrive early
 - Be calm and well organized
 - Allocate time according to marks for question

Sample Questions

- Type 1 - Questions requiring brief and precise answers
 - do not write long essays (it's not time efficient and the space provided is small), the key idea is important

Examples:

a) In LVQ networks, the weights between which layers are adapted?
Between the input and competitive layers

b) Consider an LVQ network with 2 inputs, 4 weight vectors, and the matrices W1 and W2:

$$W1 = \begin{bmatrix} 0 & 0 \\ 1 & 1 \\ 0 & 1 \\ 1 & 0 \end{bmatrix}, W2 = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \end{bmatrix}$$

How many classes and subclasses are there?
Which subclasses make up each class?

2 classes and 4 subclasses

subclasses 2 and 3 make up class 1, subclasses 1 and 4 make up class 2.

Sample Questions

- Type 2 - Circle the correct answer and provide a brief and clear justification

In RBF networks designed for approximation many hidden neurons typically contribute to the output value.

Circle one of: True False

Justify your answer: *Only a few hidden neurons (the one whose centers are close to the current example) will have significant activation as RBF nets use Gaussian function.*

Sample Questions

- Type 3 - Solve a problem
 - involves calculations

The following training set is given:

input	output
1 0 0	1
0 1 1	0
1 1 0	1
1 1 1	0
0 0 1	0
1 0 1	1

Train a perceptron with bias on this training set for 1 epoch. Assume that all initial weights and the bias are 0. Show the values of the weights and bias the end of each iteration. (the solution is on the web, week 2)

Good luck!