

Tutorial 1: CSNLP

Activation Propagation and Specifying networks in Tlearn

Date: Wed, 31 October 2001

DueDate: Tues, 6 November 2001, in class

Student's name:

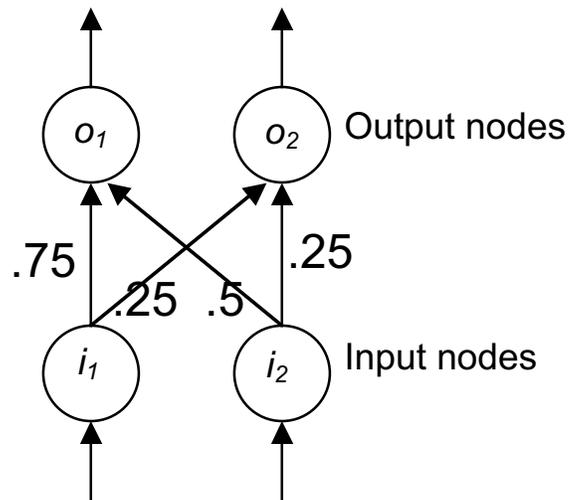
Specifying network configurations in Tlearn:

Ex 1. Open the NetInput folder from Chapter 1 of Tlearn

- Start Tlearn
- Open a project: Network -> Open Project *select* NetInput *from the* ChapterOne *directory*
- Select: Displays -> Network architecture to examine the network

File: NetInput.cf

```
NODES:
nodes = 2
inputs = 2
outputs = 2
output nodes are 1-2
CONNECTIONS:
groups = 0
1-2 from i1-i2
SPECIAL:
linear = 1-2
weight limit = 4.00
```



Other important files include:

NetInput.data: the stimulus patterns

NetInput.teach: the desired response

Question: Look at the NetInput.data file/window. Determine by hand what the outputs activations will be for the 4 different input stimuli, assuming the weights shown above. Fill in the table below:

Input 1	Input 2	Output 1	Output 2

Ex 2. We can now load a pre-specified weights file for the network:

- Load the weights: Network -> Testing Options *select* Most recent
- Run the network: Network -> Verify network has learned
- Open the NetInput.1.wts file, to confirm the weights are as in the diagram

File: Netinput.1.wts:

```
NETWORK CONFIGURED BY TLEARN
# weights after 1 sweeps
# WEIGHTS
# TO NODE 1
0.0000000000      from bias
0.7500000000      from i1
0.5000000000      from i2
0.0000000000      from node1
0.0000000000      from node2
# TO NODE 2
0.0000000000
0.2500000000
0.2500000000
0.0000000000
0.0000000000
```

Question: Look at the output window. Do the outputs agree with those calculated by hand for the four input patterns?

Ex 3. What activation function is being used by the output nodes?

Ex 4. Examining the network graphically: Hinton diagrams

- Select: Display -> Node activities
- This shows the pattern of activation of all the nodes, for a given input stimulus
 - Large white square means high activation
 - Large grey square mean low activation
 - Smaller white square on grey background means intermediate activation
 - Large black square would be highly negative
- Confirm the activations for the 4 patterns are what you expect
- Select: Display -> Connection weights
- Confirm that the weights shown correspond approximately to the numerical values.