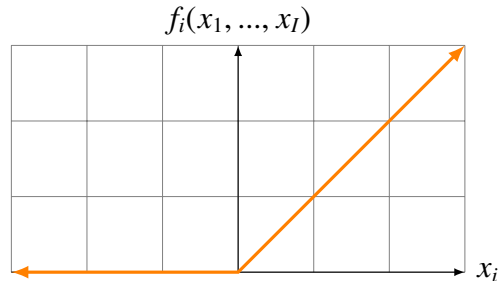


LING3804: Problem Set 4

Due via Carmen dropbox at 11:59 PM 3/9.

1. [10 pts.] For the following threshold function:

$$f_i(x_1, \dots, x_I) = \begin{cases} x_i & \text{if } x_i > 0 \\ 0 & \text{otherwise} \end{cases}$$



what would the Jacobian be at the below vector?

0.8
-0.3
0.1
0.9
-0.6

2. [10 pts.] Calculate the error through the below Jacobians:

1	2	3	1	0	0	-1	0
			0	1	0	0	-1
			0	0	1	0	0

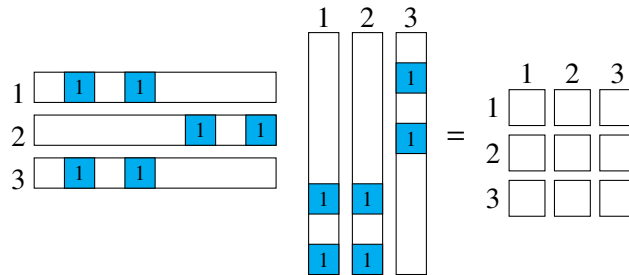
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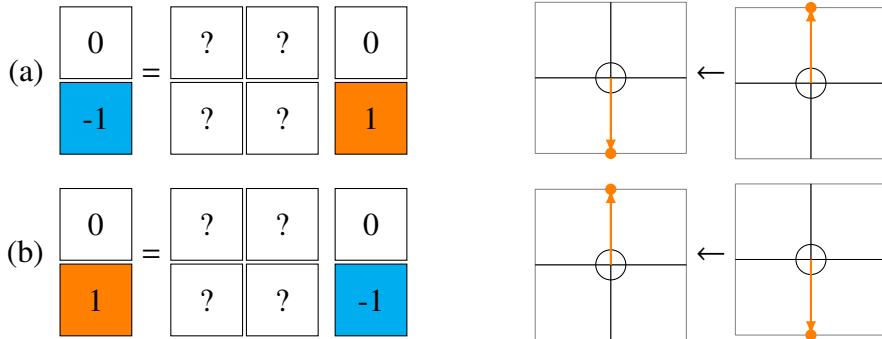
3. [10 pts.] What is the similarity between the below vectors:

$$\begin{bmatrix} \square \\ \square \\ \square \end{bmatrix} = \begin{bmatrix} 0.6 & 0 & 0.8 & 0.6 \\ 0.8 \\ 0 \end{bmatrix}$$

4. [10 pts.] Fill in the similarities in the resulting attention matrix:



5. [10 pts.] Using the below position vectors, which each offset two positions of the position vectors in the lecture notes on attention models:



write a matrix to encode this offset:

