

DEEP LEARNING: EXERCISE SHEET 3

(SoSe2018)

25TH OF APRIL (DUE 9TH OF MAY AT 14:00. YES, YOU READ IT CORRECTLY, TWO WEEKS! =D)

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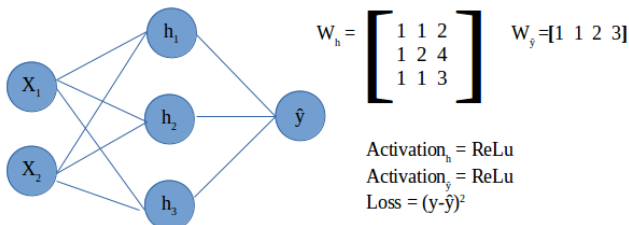
expelled from your program.

You are allowed to discuss solutions, but if you work on a group, you must indicate on your sheet with whom are you working with.

Group submissions earn 0 points, but counts as participation.

QUESTION 5: BACK PROPAGATION - 20 POINTS

a) [15 points] Given the neural network below (flowing left to right). Compute the functions for updating every weight W . Compute the forward pass for $x = (2 \ 4)$, $y = 2.5$ and a backward pass. What are your final weights? How much it improved in terms of loss? Use gradient descent with learning-rate of 0.1.



Note that activation of all nodes are ReLu.

b) [5 Points] What would happen in the network above if the loss function was defined as $L(y, \hat{y}) = \hat{y} - y$ after several iterations? And what if it was $L(y, \hat{y}) = y - \hat{y}$. (Consider that y will always be positive).

ATTENTION!

DO NOT FORGET TO WRITE YOUR NAME ON YOUR SHEET! Nameless sheets will NOT be graded! Do not rely putting your name on your file.

WARNING!

If we detect **Plagiarism** on your solution, you will receive no points for it. If a second plagiarism attempt is detected, you might fail the class or be

HOW TO SUBMIT?

DO NOT FORGET TO WRITE YOUR NAME ON YOUR SHEET! Nameless files will NOT be graded!

The new submission method is via LearnWeb.

Link to the tutorial (Id 3108) is here: <https://lsf.uni-hildesheim.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=70814&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung>

And enroll also on the LearnWeb course: So that we can post your grades, news and receive your exercises: <https://www.uni-hildesheim.de/learnweb2018/course/search.php?search=3108>