## DEEP LEARNING: EXERCISE SHEET 11 (SOSE2018)

#### 4TH OF JUNE (DUE 11TH OF JULY AT 14:00)

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# **QUESTION 20**: GAN BASICS (5 POINTS)

Answer the following questions with a maximum of two bullet points each (third bullet points and follow ups will be disconsidered):

- a) Give two examples of a Minimax Scenario outside Deep Learning and Computer Games. (1 point)
- b) Why the discrimantor is trained with gradient ascent and not descent by default? (1 point)
- c) Why, in practice, it is not a good idea to learn parameters from the generator and discriminator at the same time? (3 Points)

## **QUESTION 21**: GAN BACK-PROPAGATION (15 POINTS)

Given the two networks below, write down the udpate equations (given some learning rate  $\lambda$ ) for every weight  $\beta$  of the Generator and every weight  $\theta$  of the discriminator. Consider *Z* as input noise for the generator. And *X* as a sample to be discriminated. Explain how those update equations would be used while training this network.



## 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. https://www.unihildesheim.de/learnweb2018/course/search.php?search=3108

### 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 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.