Business Analytics: Exercise Sheet No.6 (WiSe2018-19)

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Question 12 - Gradient Boosted Trees - 10 points

a) (Type A) (3 points) On the slide 17 of the Gradient Boosted Tree lecture lecture we can find two terms: G_n and H_n. What are these representing?

   b) (Type C) (7 points) Derive these terms (G_n and H_n) for the loss:

$$L(y, \hat{y}(x)) = (y - \hat{y}(x))^2$$

Question 13 - 10 points

(Type B) Consider the data-set below. Set $\lambda = \gamma = 0$ for simplicity. Learn the algorithm for two rounds (two trees) with maximum depth of two for each tree. Plot your root mean squared error for each round (before and after).

x_1	x_2	y (label)
1	2	1
2	2	1
3	2	1
2	6	1
3	6	0
1	6	0
1	8	0
1	8	0

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.

Bonus Points!

Submission grades represent 100% of this bonus. For each 11% of your total grade you will earn 0.5 bonus points on the final exam up to a maximum of 4 points.

How to submit?

Inside the Samelzonplatz Campus, there is a post-box cluster to the right corridor from the entrance. Look for the "Business Analytics Post-Box" (we will set it up on Monday). For security you must also submit on our learnweb page: `https://www.uni-hildesheim.de/learnweb2018/course/search.php?search=3108` (password: 3108). If you submit your physical version you will get it back with correction markings. Submitting on learnweb will guarantee that you will receive your grade (in case you forget to post it or it goes missing).

   Keep in mind that your solution sheets are important documents, so make sure they are clean and organized. Non-readable sheets will not be graded.

   WRITE YOUR NAME, ID, AND TUTORIAL GROUP.

   REMEMBER TO KEEP A COPY OF YOUR SOLUTION FOR YOURSELF!