Report - DD2421 - 2018-06-19

Respondents: 1
Answer Count: 1
Answer Frequency: 100.00 %

Please note that there is only one respondent to this form: the person that performs the course analysis.

Course analysis carried out by (name, e-mail):

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COURSE DESIGN

Briefly describe the course design (learning activities, examinations) and any changes that have been implemented since the last course offering.

This is the second course round of DD2421 Machine Learning while the first one was given in P1. Students were free to choose one of the two course rounds, and therefore the two are not supposed to be very different from each other. The course started on finishing the marking of re-exam of the first round, leaving only little time for revising the contents, but yet we made some updates as stated in the bottom of section.

The course provides an overview of the field of machine learning and describes a number of learning paradigms, algorithms, theoretical results and applications. It also covers some basic concepts of statistics, artificial intelligence and information theory relevant to machine learning.

Summary of the course design - lectures, labs, and written exams:

12 lectures with lecture notes made available on course webpage
(6 by Atsuto Maki, 3 by Giampiero Salvi, 2 by Örjan Ekeberg, and a summary lecture by all).
The materials are mainly based on James et al. [1], Prince [2], and Rojas [3] for supplementary reading, all available online.
[1] An Introduction to Statistical Learning,
G. James, D. Witten, T. Hastie and R. Tibshirani (Springer, 2013).
[2] Computer Vision: Models, Learning, and Inference, Simon J.D. Prince (Cambridge University Press, 2012).
[3] Neural Networks - a Systematic Introduction, R. Rojas (Springer-Verlag, 1996).

Three lab assignments are orally examined by a group of TAs: 1. Decision Trees, 2. Support Vector Machines, and 3. Boosting.

Written exam by A-section (eight multiple choice) + B-section consisting of nine questions. In A-section simple questions regarding basic concept and/or terminology were asked as an essential part for passing. B-Section consisted of questions typically corresponding to a learning outcome (full point is 27). Graded in the range of A-F/Fx.

Changes made from course round HT2017:
• Instructions in Lab 2 have been augmented with Python hints.
• This time we had all the doktorand TAs from RPL where Atsuto belongs to, and shared the same approach and instructions for the lab assignments.
• Lab-booking system has been revised in a way not to allow overwriting the others' bookings.
• We put an additional material describing Monty Hall Problem on Canvas (which we used to introduce as the Three Prisoners Problem during the lecture).

THE STUDENT'S WORKLOAD

Does the students' workload correspond to the expected level (40 hours/1.5 credits)? If there is a significant deviation from the expected, what can be the reason?

The students' workload was in the range of 9-11 hours/week in average while it varies between individuals: 6-17 hours for most of the students, which is a little shorter than the expected level and the statistics in P1. However, the course was run in a similar manner in P1, well stream-lined, and hence it should be either due to the difference in the students' background and/or an issue of sampling; only 35 students (< 15%) participated in the course evaluation at this time.

THE STUDENTS' RESULTS

How well have the students succeeded on the course? If there are significant differences compared to previous course offerings, what can be the reason?

Overall passing rate stayed similar to the previous period: 95% after the re-exam. About half of the students among those received 'A' or 'B' with more B's than A's. In this course round, relatively fewer students received 'A' compared to the distribution in P1 while the ratios of 'B' and 'C' were similar. A potential reason could be that the questionaries given in P1, for the very first examination of DD2421, were designed in a rather straightforward manner as a whole. Those in this course round were not made particularly tough.

OVERALL IMPRESSION OF THE LEARNING ENVIRONMENT

What is your overall impression of the learning environment in the polar diagrams, for example in terms of the students' experience of meaningfulness, comprehensibility and manageability? If there are significant differences between different groups of students, what can be the reason?

The polar diagrams stay balanced as was those in the first course round, which is natural as the contents are meant to be basically unchanged. Two exceptions in terms of (lower) rating were "15. I could practice and receive feedback without being graded" despite the increase in the number of TAs per student, and "20. I had opportunities to choose what to do". The tendency was similar in P1, which somehow reflects the nature of a course with a large number of participants. Yet, for the former we can increase the hours of drop-in session, not only the number of TAs, which we will ensure in the next course round.
Between different groups of students there were no distinctive differences apart from that the aspects on "manageability" were very well evaluated by "Svensk students i Årskurs 1-3".

Commented as one of the best aspects was "Giving some vivid examples relating to daily life", which we intend to deliver, and will continue to thrive.

ANALYSIS OF THE LEARNING ENVIRONMENT

Can you identify some stronger or weaker areas of the learning environment in the polar diagram - or in the response to each statement - respectively? Do they have an explanation?

Stronger areas (> 6.0) include "1. I worked with interesting issues" and "The assessment on the course was fair and honest" whereas weaker one (< 4.0) was "20. I had opportunities to choose what to do". Those are known by now as they have also been analysed previously.

ANSWERS TO OPEN QUESTIONS

What emerges in the students' answers to the open questions? Is there any good advice to future course participants that you want to pass on?

- The experience on the lab booking system were not optimal for some students. This remained as an issue, and we will look into possible alternatives.
- The overlap with DD2424 Artificial Neural Networks was pointed out by two students. We are aware of this and would need to discuss it with wider audience if we were to take this into considerations.
- There was a voice on clarity about the part on Probabilistic Machine Learning, for which we will gather some further feedback.

PRIORITY COURSE DEVELOPMENT

What aspects of the course should primarily be developed? How could these aspects be developed in the short or long term?

• We ensure to increase the hours and options for the drop-in sessions to provide more opportunities for giving feedback.
• We will make a feedback questionnaire on the part of probabilistic machine learning.
• Labs are popular, valued as "very high quality", yet we also received some wishes to improve the instructions from a few students, which we will investigate.
• Adding another lab is kept as a medium term goal.
• We introduce the latest applications of Machine Learning for instance to computer vision, and continue to do so, e.g. in terms of the ways to collect training data.

OTHER INFORMATION

Is there anything else you would like to add?

The TAs were Alexander Kozlov (primary), Özer Özkahraman, Ignacio Torroba Balmori, Vladimir Li, Taras-Svitozar Kucherenko, Samuel Murray, Sofia Broomé, Andreas Lindner (doktorand), Hector Anadon Leon, Evangelia Gogoulou, and Alex Hermansson Grobgeld (MSc students).