DD2434 HT 2021

Machine Learning, Advanced Course 7.5 credits

DD2434 is taught by Jens Lagergren and Aristides Gionis. The material includes fundamental dimensionality reduction techniques graph-based machine learning methodologies, and a large part is devoted to the probabilistic approach to machine learning. The latter part covers probabilistic modeling and maximum likelihood as well as Bayesian inference methods such as expectation maximization and variational inference.

The course has been given mostly online during the last two years, but lecture hall interaction will hopefully be possible during HT 2022. However, the on-line material developed during the pandemic period will be used to have a higher degree of flipped classroom in the course. The course is partly a victim of the popularity of machine learning. That is, there is a large number of students who want to follow an advanced machine learning course but do not appreciate the theoretical nature of the advanced machine learning topics. We believe that this problem will largely be resolved when we can expect the students to have passed the new course DD1420 Foundations of Machine Learning, 7.5 credits. Today, it is evident that the better-prepared students, e.g., international exchange students, have a higher appreciation for the course and perform better. Also, many students consider the examination and the project to provide insights and to be rewarding, but other students are not used to solving problems with pen and paper and also do not consider it to be a motivating part of a master-level course in machine learning.

Several issues have been identified from earlier years, and novel approaches to handle them will be tried during HT 2022:

1. The workload is still too high. This has been handled by making the assignments less complicated and relaxing demands regarding reports.
2. The students desire to have a larger degree of collaborative moments. We will continue to identify implementation-oriented parts of the examination that can be given as collaborative tasks.
3. The course material has been updated, i.e., both content to reflect the area better and the videos to provide a better learning experience.

This is a summary of the responses from the DD2434 2022 course feedback:

Response Statistics:
- Total Respondents: 152
- Number of Responses: 24
- Response Rate: 15.79%

Estimated Workload:
The majority of respondents worked between 15-17 hours/week and 12-14 hours/week (each category receiving 13% of responses).
- The highest reported workload was above 41 hours/week (3 responses, 13%).

Comments on Workload:
- Students found the workload very high, particularly towards the end of the course.
- Many suggested dividing the course content or reducing the number of assignments.
- Students appreciated the project part but found the time management challenging, with much work being concentrated at the end, including during holidays.
- Some students suggest removing the second part of the course, which is not well-connected to the first.

Learning Experience (LEQ):
- The course had a bi-modal scoring curve on aspects like meaningfulness, comprehensibility, challenge, and support.

- There were mixed responses regarding the course organization, understanding of the subject matter, and feedback received.

General Feedback:
- The best aspects of the course were hands-on experience, challenging assignments, and the flipped classroom approach.
- Suggested improvements included better organization of lectures, reduced workload, clearer instructions, and better integration of course materials with assignments.
- Advice for future participants included starting early with assignments, preparing for a high workload, and leveraging prior knowledge in related subjects.

Specific Responses:
- Responses varied across LEQ statements, with some students finding the course meaningful and stimulating, while others struggled with the workload and organization.
- Collaboration and togetherness were noted as positive aspects, although some respondents felt isolated due to online delivery.
- The assessment methods were seen as fair by some but not by others, also in this case there is a bimodal distribution.