Report - EL2805 – Fall 2023

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):

Alexandre Proutiere, alepro@kth.se

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

The course is based on 14 standard lectures based on slides and blackboards, 6 exercise sessions and 3 computer exercises. The assessments are based on 1 homework, 2 laboratory exercises and a final exam. Since the first course (2018-2019), we have made efforts each year to polish and improve the content of the course. Most efforts have focused on introducing the rapidly evolving tools used in deep RL – we are always trying to integrate novel algorithms in the lectures but also in the labs. Again this year, the teaching was in the class room, but we leveraged the digital contents we created for the last course offerings (we made all the materials, videos of the lectures and exercise sessions online).

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?

From the answers provided by the students in the course evaluation, the students did spend around less than 19-20 hours per week on the course. The students come with very heterogenous backgrounds, which induces a large variance in the efforts put in the course. As in previous years, some students found the course too easy, some others too demanding. We have created extra labs for students willing to gather bonus points – these labs were very time consuming but they were not mandatory. I believe that the labs were highly appreciated.

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?

This year, the pass rate for the exam was 69% overall. The pass rate is similar to those in previous years – a bit lower.

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?

From the course evaluation, the students are in general positive about the learning environment. This year, we have again updated the labs, and I added important aspects around policy gradient methods (following the recent development in RL in the research community). We also provided

more feedback to the students as requested by the students last year. This remains a challenging task due to the large number of students. Again, as in previous years, the group is extremely heterogenous, and this constitutes the main difficulty for the course design. To accommodate for this heterogeneity, we have tried to adapt the content and labs so as to provide a meaningful experience to every student.

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?

Strong aspects of the courses: the lectures, the labs, the collaborative environment (work in pairs).

Weaker aspects: the balance between theory and practice, the most recent RL methods are not all covered.

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 course blends theory and applications. Students should primarily understand the basics before experimenting in the labs. By mastering the basics, the students will understand the applicability and the limits of RL techniques. A lot of background material is needed before actually introducing the first practical RL algorithm.

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 have now developed a complete and simple theory for policy gradient methods.

Next year, I plan to try to get very early on advanced RL algorithms (even though the underlying theoretical aspects will come later during the course). This will require significant changes,

OTHER INFORMATION
Is there anything else you would like to add? Nope.