Report - IL2230 - 2023-02-02

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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DESCRIPTION OF THE COURSE EVALUATION PROCESS

Describe the course evaluation process. Describe how all students have been given the possibility to give their opinions on the course. Describe how aspects regarding gender, and disabled students are investigated.

Course evaluation was a continuous process throughout the execution of the course. I continuously asked for feedback from students during lecture intervals, right after lectures, during seminars, etc. Regarding gender balance, I asked both female and male students for feedback, and invited both female and male students to join the course meetings.

The course evaluation survey was sent out to all students on 2022-12-20 and closed on 2023-01-15 (Sunday). Students got plenty of time to answer before and after the examination date (2023-01-09). After sending multiple reminders, the answer rate was raised from 7/41 (before sending reminders) to 19/41 (46.3%), close to last year's rate 21/43, 49%.

DESCRIPTION OF MEETINGS WITH STUDENTS

Describe which meetings that has been arranged with students during the course and after its completion. (The outcomes of these meetings should be reported under 7, below.)

I arranged two meetings with students, one during the course and one after its completion. During the course, on November 23, 2022, from 3:00 to 4:00 pm, I had a feedback meeting with 3 students (1 female and 2 male students) and 2 TAs. The meeting call was broadcast to all students. On January 31, 2023, from 4:00 to 5:30 pm, I arranged another course meeting with 2 student representatives (1 female and 1 male student) and 2 TAs to go through and analyze the course evaluation survey.

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 fourth offering of a newly developed course starting from HT19. This course is a specialized course tailored for students studying the Embedded Systems master program (especially for the Embedded Platform/Electronics track) and those students who are interested in hardware acceleration of deep learning algorithms.

In this course run, the course consists of 11 lectures (including one invited lecture), 3 labs, and 2 seminars. In the seminar, students are partitioned into groups to present selected research papers, with one group (4-5 students) presenting one paper. The course examination includes two parts: the lab part with Pass/Fail and the written examination with grades (A-F) which is then the course grade (if all labs passed).

I have implemented the following changes, most of which follow my last course analysis. (1) Lecture slides were enriched in content and example. (2) All lab materials were revised and updated with clearer instructions. (3) The exercises were largely extended in both modules. (4) The first two labs swapped order according to last year's student feedback. This makes the lab order more logical. (5) The reading paper list was updated with the latest state-of-the-art papers. (6) Arrange an invited lecture by visiting professor on "CNN Hardware and Dataflow Co-Optimization".

THE STUDENTS' WORKLOAD

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

The course was offered in Period 2, Autumn term (HT 2022). The learning period spans over 10 weeks, and the learning pace is 50%. The nominal workload is 20 study hours per week. In total, it is 200 study hours, worth 7.5 ECTS credits.

According to the student survey, the workload was considered reasonable and manageable. Some students filled in 3-5 hours per week, 6-8 hours per week. It seems they have missed including the scheduled hours. By scheduled hours (11 lectures x 2 hours/lecture, 3 labs x 4 hours /lab, 2 seminars x 4 hours/seminar, 1 exercise x 2 hours/exercise = 44 hours. This is already 4.4 hours per week.)

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?

There are 41 registered students. The first exam was held on January 9, 2023. 34 students attended the first exam.
The results are 4 A, 13 B, 9 C, 3 D, 4 E, and 1 Fail. The results are as good and satisfactory as in previous years. The students showed greater interest in this course and spent good efforts in learning and understanding.

STUDENTS´ANSWERS TO OPEN QUESTIONS
What does students say in response to the open questions?

What was the best aspect of the course?
- I think the subject of the course was definitely the highlight. We had the opportunity to learn about very interesting and novel things and I was always excited to go to class to learn about something new. Reading the slides got me really interested in this field and I hope that I will have more opportunities to explore the world of embedded AI in the future.
- I feel like the professor did a great job teaching us the basics of neural networks and then connecting it with hardware accelerators. I felt like I was truly learning something cutting edge.
- Course experiments are grouped randomly, giving me the opportunity to experiment with different types of people.
- Letting students do research and their own attempts to get full understanding of knowledge.
- Lab sessions.
- Learning some new knowledge by some case study.
- The subjects were really enjoyable to learn about and group activities were another positive in the course. Papers for the seminars were carefully chosen and it was nice to see other groups' presentations and discuss the work with them.
- The lectures were the best aspect for me, as I found the topics to be quite interesting. The laboratories were also interesting and helped reinforce the lecture topics.
- Good hands-on material that is very applicable to real-world scenarios. The assignments were fun, the final exam was fair, and overall good course.
- The lectures and the labs! The lectures were interesting, insightful, and I learnt a lot through them. The lectures also created a fascination for deep learning, as this was my first course touching on ML.
- The labs allowed me to experiment and practice the theory from the lectures on my own, and discuss it with the rest of the group. The labs enabled me to easily experiment and play around with DL on my own, raising my confidence in the topic. It is the very best thing I can ask of a course!
- The seminar sessions are enjoyable which allow us to explore proper papers.
- the course material
- I really enjoyed the labs, going from VHDL all the way to mapping with the connection with the course IL2225.

What would you suggest to improve?
Regarding things to improve, the students have mainly commented on teamwork, group assignments, seminar presentations etc. The main issues can be summarized as follows: some students had insufficient background, for example, in VHDL, individual contributions were uneven, team communication was not as smooth as expected, seminars were too long and some presentations were not so well prepared. Also, there were students who wanted to try out all labs (Lab 3a and 3b).

Is there anything else you would like to add?
- Overall it was a really great experience, like I said earlier I felt like I was truly learning novel and interesting things and I hope I will have the opportunity to work on something like this in the future.
- I want to thank prof. Lu and the TAs for their work. This was a fascinating and inspiring introduction to DL.
- The course was great and the topics really interesting.

SUMMARY OF STUDENTS' OPINIONS
Summarize the outcome of the questionnaire, as well as opinions emerging at meetings with students.

Students are generally very positive about the course. The lectures were enjoyed and the course materials were appreciated by the students. The labs were well designed and many students were enthusiastic about the tasks. The seminars allowed students to access the latest research papers and touched upon recent developments in this hot area. The exercises helped students to put theoretical knowledge into practice. The changes introduced in this course round further enhanced the course. Students have expressed their opinions on teamwork, group assignments, seminar presentations, etc. Most of the issues such as team communication and workload/task distribution in group work are not new but not easy to have a simple fix.

OVERALL IMPRESSION
Summarize the teachers' overall impressions of the course offering in relation to students' results and their evaluation of the course, as well as in relation to the changes implemented since last course offering.

This course offering was again a successful one. The subject was interesting and stayed up to the front. The students enjoyed taking the course, engaging in the course activities, and achieved good performance. The changes introduced in this course round further enhanced the course. Unequal contribution and smooth communication in group work have always been an issue. This year's seminar presentations need to be improved.

ANALYSIS

Is it possible to identify stronger and weaker areas in the learning environment based on the information you have gathered during the evaluation and analysis process? What can the reason for these be? Are there significant difference in experience between:
- students identifying as female and male?
- international and national students?
- students with or without disabilities?

The responses to each statement are scored from -3, -2, -1, 0 (neutral), 1, 2, 3, X (no standing), corresponding to scores 1 (-3) to 7 (+3). There are no big variations across the answers. The highest score is 6.3, while the lowest is 5.2.

The detailed scores are listed for reference.
In Category 1, Meaningfulness - emotional level, 6 questions. The score vector is [6.3, 5.9, 5.8, 5.7, 5.3, 6]
Stimulating tasks
1. I worked with interesting issues (6.3)
Exploration and own experience
2. I explored parts of the subject on my own (5.9)
Note that a lower score does not necessarily mean negative. One student gave a lower score (2) here, but the comments were positive.
Comments (My response was: -2) (score 2)
"Since the professor offered a vast amount of information from various sources, there was never any need to explore the subject on my own - all material available was more than enough to learn plenty!"
Another student who gave the highest score (7) commented from another angle.
Comments (My response was: +3) (score 7)
"Yes, this was easy to do thanks to the large reading list."

3. I was able to learn by trying out my own ideas (5.8)

Challenge
4. The course was challenging in a stimulating way (5.7)
Belonging
5. I felt togetherness with others on the course (5.3)
6. The atmosphere on the course was open and inclusive (6)

In Category 2, Comprehensibility - cognitive level, 10 questions. The score vector is [6.2, 6.2, 5.9, 6.1, 5.9, 6, 5.6, 5.5, 5.6, 6.3]
Clear goals and organization
7. The intended learning outcomes helped me to understand what I was expected to achieve (6.2)
8. The course was organized in a way that supported my learning (6.2)
Understanding of subject matter
9. I understood what the teachers were talking about (5.9)
10. I was able to learn from concrete examples that I could relate to (6.1)
11. Understanding of key concepts had high priority (5.9)
Constructive alignment
12. The course activities helped me to achieve the intended learning outcomes efficiently (6)
13. I understood what I was expected to learn in order to obtain a certain grade (5.6)
Feedback and security
14. I received regular feedback that helped me to see my progress (5.5)
15. I could practice and receive feedback without being graded (5.6)
16. The assessment on the course was fair and honest (6.3)

In Category 3, Manageability - instrumental level, 6 questions. The score vector is [5.8, 5.9, 6.1, 5.3, 5.8, 6.3]
Sufficient background knowledge
17. My background knowledge was sufficient to follow the course (5.8)
Time to reflect
18. I regularly spent time to reflect on what I learned (5.9)
Variation and participation
19. The course activities enabled me to learn in different ways (6.1)
20. I had opportunities to influence the course activities (5.3)
Only one student (with response +1, score 5) commented. "The professor and TAs felt open to feedback."

Collaboration
21. I was able to learn by collaborating and discussing with others (5.8)
Support
22. I was able to get support if I needed it (6.3)

There are no significant differences in experience between male/female students, international/national students, students with/without disabilities.

* About gender, one student commented "Considering the type of course and its activities, there were equal opportunities for people of every gender to participate and learn."
* About internationalization, students have the following comments. "As an International student, I felt like there were no barriers in my learning experience. It was cool to learn that Zhonghai is also fluent in Swedish, so, good for Swedish students I guess." "I don't feel that being an international student made the course experience any different for me." "It was quite an international environment, I haven't felt left out.".
* Per disability, one student commented: "Good".

PRIORITIZED COURSE DEVELOPMENT

What aspects of the course should be developed primaily? How can these aspects be developed in short and long term?

The course has become a mature course in both content and organization. Students love this subject and enjoy taking the course. To keep the course advanced, its content will be continuously updated according to state-of-the-art developments.

In the next offering, individual contribution and communication in group work should be further improved. We will work on this always taking students' opinions into consideration. The following specific points are to be addressed. (1) Give more guidance or good example for scientific presentations. (2) Give more help to students with less background knowledge.