

Report - ID2223 - 2021-10-22

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.

We had two evaluations in the course: one mid-term evaluation after the third week of the course and one at the end. Moreover, all the students could directly comment on the course, either in person or through Canvas.

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.)

We didn't have any specific meetings with students, but students could contact us to meet anytime they needed.

COURSE DESIGN

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

This course marries data-parallel programming with machine learning (ML) and deep learning (DL), and helps students to work on distributed ML/DL problems with big datasets. At the end of the course, students will be familiar with the main ML/DL algorithms and know how to implement them using data-parallel programming platforms, such as Spark and TensorFlow/PyTorch, on a cluster of computers and apply them on massive datasets. This course has a system-based focus, that is, students will learn not only the theory of ML/DL but also the practical aspects of building large-scale systems that take advantage of ML and DL.

After the course the student should be able to:

1. ILO1: explain the principles of supervised and supervised ML algorithms and apply their techniques to solve problems.
2. ILO2: explain the principles of DL algorithms, such as learning in deep neural networks (DNN) and training techniques.
3. ILO3: explain different DNN architectures, such as convolutional neural networks (CNN), recurrent neural network (RNN), autoencoders, etc., and know how to build and train such networks.
4. ILO4: build ML algorithms using Spark.
5. ILO5: build DL algorithms using TensorFlow or PyTorch.
6. ILO6: build advanced applications using Spark and TensorFlow/PyTorch, and make scalable applications on a cluster, and process massive data.

The course consists of a number of tasks, in which each one assesses different ILOs.

1. Task1 (seven review questions): through these questions, we will ask related questions to each lecture to motivate students to study the lecture notes and papers. (P, F)
2. Task2 (one ML lab assignment): this lab assignment gives an end-to-end ML problem to students that motivates them to take advantage of ML techniques to solve the problem and use Spark to implement it. (A-D, F)
3. Task3 (two DL lab assignments): in these labs, students will work with different DNN networks and will implement them using TensorFlow or PyTorch. (A-D, F)
4. Task4 (final project): the purpose of this task is to implement an advanced ML/DL application on processing massive data (which should be proposed by students and confirmed by the teacher) on a cluster. (A-D, F)
5. Task5 (final exam): the final exam consists of a number of questions from different parts of the course that assesses the theoretical knowledge of students about covered platforms in the course. (C-E, F)

THE STUDENTS' 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?

It is more than the expected level of workload and for the next round of the course, we need to update the tasks to resolve this issue.

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?

Less than 5% of the students couldn't pass the course, and more than 80% got grades C or higher.

STUDENTS' ANSWERS TO OPEN QUESTIONS

What does students say in response to the open questions?

* What was the best aspect of the course?

Theoretical and practical aspects of ML/Deep learning. The course organization, the topics, and the review questions.

* What would you suggest to improve?

More focus on the "scalable" aspects of ML/DL.

SUMMARY OF STUDENTS' OPINIONS

Summarize the outcome of the questionnaire, as well as opinions emerging at meetings with students.

The students were happy about the course structure, topics, and assignments. Although there is no complaint about the workload, it should be reduced for next year.

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.

Overall the students expressed positive evaluation of the course, with all LEQ statements scoring more than 5. There was no significant difference in evaluation from different groups of students.

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 highest scores were on questions 1 (6.4) "I worked with interesting issues", 16 (6.5) "The assessment on the course was fair and honest", 22 (6.4) "I was able to get support if I needed it", and the lowest scores were on the questions 5 (5.1) "I felt togetherness with others on the course", 15 (5.2) "I could practice and receive feedback without being graded", and 20 (5.2) "I had opportunities to influence the course activities". In general, the LEQ scores confirm that the students were happy with the course.

PRIORITIZED COURSE DEVELOPMENT

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

The tasks should be redesigned to reduce the workload of the course, which is more than expected now.
