FID3024 Systems for Scalable Machine Learning 7.5 credits

System för skalbar maskininlärning

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for FID3024 valid from Autumn 2020

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Enrolled as a doctoral student.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After passing the course, students should be able to:

- Demonstrate systematic understanding of ML systems and capacity to scholarly analyze and criticize their components.
- Reflect on the ideas and technologies related to ML systems with insight on their possibilities and limitations.
- Examine how ML systems are currently used and evaluate how they can be used for new purposes and under different application domains.
- Identify the need for further knowledge in improving ML systems.

Course contents

The course covers the following topics in the same order

1. Fundamental ML, e.g., generalization, back-propagation, etc.
2. Parallelization, e.g., data-parallel, model-parallel
3. AutoML, e.g., hyperparameter optimization, meta learning, and Neural Architecture Search (NAS)
4. Scheduling and optimization, e.g., model compression, gradient compression, etc.
5. Robust learning, e.g., byzantine-resilient learning
6. ML platforms, e.g., TensorFlow, Ray, Mllib

Examination

- EXA1 - Examination, 7.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

The course will be assessed with a Pass/Fail grade, based on active participation in the discussion meetings, as well as a scientifically sound review report in each week. In addition to this, a passing student must attend at least 75% of all lectures and 75% of all student presentation sessions.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.

- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.