FID3017 Stream Processing 7.5 credits

Ström bearbetning

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

Establishment

Course syllabus for FID3017 valid from Autumn 2016

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Language of instruction

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

Intended learning outcomes

The course studies fundamentals of data stream processing. The emphasis of the course is on the theoretical foundations and research issues surrounding the algorithmic, analytical, software engineering, and distributed processing architectural foundations of stream processing. It also provides a solid programming foundation and an understanding of the prac-

tical aspects of building stream processing applications. We will use computation systems for stream processing, such as Storm and InfoSphere, Spark and Flink.
After this course, students will be able to program and build stream processing systems, services and applications. They are also expected to know how to solve problems in real-world applications that process infinite/never-ending data (data streams). In addition, students will be able to describe and apply current research trends in data-stream processing (including methods, algorithms, language support and tools).

Course contents

The course contents includes:
• Introduction to Stream Processing
• Application Development
• Large-scale development
• Visualization and Debugging
• Architecture of a stream processing system
• Architecture of InfoSphere Streams, Storm, Apache Spark and Apache Flink
• Design principles and patterns for stream processing applications
• Stream analytics
• Application use-cases
• Overview of the current research in data stream processing and its connection to other relevant research areas.

Course literature

The contents of the course are derived from the following textbook:
H.C.M. Andrade, B. Gedik, D.S. Tugara, Fundamentals of Stream Processing: Application Design, Systems, and Analytics, Cambridge University Press, 2014

Examination

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

Examination is based on compulsory attendance, a number of approved assignments, oral presentations and a passed report describing a possible use of stream processing tools, algorithms and methods in student's research; relationship between student's research and stream processing methods; discussion of current research issues and possible solutions in stream processing. To pass the course, a student should also be able to critically evaluate

and assess different approaches, as well as be able to compare and explain advantages and disadvantages of various methods, algorithms and systems for stream processing.

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.