University of Copenhagen - Courses

NDAK20002U Neural Information Retrieval (NIR)

EXPAND ALL ⌄   Volume 2022/2023

Education

MSc Programme in Computer Science

Content

The course objective is to offer an advanced introduction into information retrieval. The goal is to understand and model how people search for, access and use information, in order to design and evaluate reliable retrieval algorithms. Through realistic and sound projects, the course aims to stimulate and prepare students for their MSc thesis work.

The course will focus on these main questions:
- How can we design efficient retrieval systems?
- How can we design effective retrieval systems?

Content in detail:
Architecture of an IR system
- Basic building blocks
- Crawling, filtering and storing information
- Ranking with indexes

Information ranking models
- Deep learning for search engines
- Probabilistic & machine learning models
- Complex queries and combining evidence
- Domain-specific ranking
- Evaluation and optimisation

Learning Outcome

Knowledge of
- The basic architecture of retrieval systems
- The basic models and techniques for collecting, storing and ranking information
- Different criteria for information retrieval evaluation

Skills in
Students should be able to transfer the above knowledge to real-world tasks by:
- Designing appropriate strategies for crawling, storing and ranking information

- Planning and carrying out appropriate evaluations

Given a working retrieval system, students should be able to:

- Diagnose problems in its main information processing functions
- Design and calibrate appropriate solutions

Competences to

- Explain the basic information retrieval principles to both laymen and specialists
- Use standard procedures and practices when designing or implementing information retrieval solutions
- Present evaluation analyses and results in a proper format of a written report such that a technically qualified person can follow and obtain similar findings

Literature

The literature consists of seminal research and review articles from central journals and selected papers from peer-reviewed conferences, textbooks and research reports. This is supplemented with practical experience gained through lab sessions.

The literature will be listed in Absalon.

Recommended Academic Qualifications

It is expected that students know how to program and have a working knowledge of Machine Learning corresponding to the course Machine Learning (ML) or an equivalent course.

Academic qualifications equivalent to a BSc degree is recommended.

Teaching and learning methods

The course will use a combination of lectures (2 hours per week) and lab sessions (2 hours per week). Lectures and labs might include discussions, group activities, and student presentations. Where possible, relevant guest lecturers will be involved.

Students will carry-out a project which consists of both practical exercises (implementing state of the art solutions) and theoretical questions (to reflect on the course content in relation to the project). The project will cover the main topics presented during the lectures.

Remarks

The course is identical to NDAK15005U Information Retrieval (IR).
It is not allowed to pass both courses.

Workload

Category	Hours
Lectures	32
Preparation	80
Project work	71
Exam Preparation	22
Exam	1

Total   206

Feedback form

Oral
Feedback by final exam (In addition to the grade)

Sign up

Self Service at KUnet

As an exchange, guest and credit student - click here!

Continuing Education - click here!
PhD's can register for MSc-course by following the same procedure as credit-students, see link above.

Exam

Credit
7,5 ECTS

Type of assessment

Written assignment
Oral examination, 20 min

Type of assessment details

Specifically, the exam consists of two parts:

1. An individual report (written assignment) based on the project.
2. An individual oral examination (without preparation) based on the report.

The written and oral examination are not weighted, why only one overall assessment is provided for the two parts of the exam.

Aid

All aids allowed

Marking scale

7-point grading scale

Censorship form

No external censorship
Several internal examiners

Re-exam

Same as ordinary exam.
For the re-exam the student must complete a new project and submit a new report. The deadline for submitting the new report will be published in Absalon.
Additionally the 20-minutes oral examination without preparation will be administered covering the full course syllabus.
The written and oral examination are not weighted, why only one overall assessment is provided for the two parts of the exam.
It is not possible to reuse parts of the exam at a later exam.

Criteria for exam assesment

See Learning Outcome.

Course information

Language
English

Course code
NDAK20002U

Credit
7,5 ECTS

Level
Full Degree Master

Duration
1 block

Placement
Block 4

Schedule
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Course capacity
No limit
The number of seats may be reduced in the late registration period

[Course is also available as continuing and professional education](#)

Study board
Study Board of Mathematics and Computer Science

Contracting department
Department of Computer Science

Contracting faculty
Faculty of Science

Course Coordinators
Christina Lioma (c.lioma@di.ku.dk)

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If you have questions about the course please contact your local Student service.

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