Web Intelligence - (WI)
5 ECTS

Study curriculum - SW7: https://studieordninger.aau.dk/2019/17/1095
Study curriculum - CS-IT7: https://studieordninger.aau.dk/2019/17/884
**Course in Moodle: https://upgrade.moodle.aau.dk/course/view.php?id=31422

Placement: SW7, CS-IT7
Course responsible
Peter Dolog
Type and language
See study curriculum for the course
All material used in the course will be in English and will be made available for download in the 'Resource folder' for each lecture. Lectures will be conducted in English.

Purpose

See objective in the course description in the study curriculum

The amount of digital information on the web is growing at an explosive pace. People, organizations and corporations are continuously adding different types of information to the web, they are connecting to each other on the web, they collaborates on tasks via the web, and they are logging how users view and interact with the web. Web Intelligence is an area which applies machine intelligence to the web in a broad sense; comprising information access, information retrieval, intelligent web services, and so on. This course will, in particular, investigate various web intelligence techniques for processing the web in order to explore, structure, and reason about it; thus making the web both more valuable and accessible. In particular, the course will cover the following tasks within the area of web intelligence:

- Information retrieval & search
- Recommender systems
- Social network analytics
- Business intelligence from server logs, blogs, wikis, and reviews
- Crowd sourcing

To enable the reasoning or analytics built into web intelligence, we rely on the gathering or mining of information from three main areas that all will be covered in this course, namely

- web content
- web structure
- web usage

Web content mining is the automated process of discovering and extracting information from text, images, audio or video data on the Web. Technologies in web content mining draws heavily on standard techniques from Natural Language Processing and Information Retrieval. In addition to search services' obvious need for determining if web content matches a search query, content mining is also an attractive way of gathering information for many corporations and government agencies; for example, by mining blogs, online reviews and social media pages to discover the general opinion or sentiment towards specific topics in order to better understand the customers or public that they serve. Web structure mining builds on the fact that everything on the web is connected: people, information, events and places, all the more so with the advent of online social media. A practical way of making sense of the tangle of connections is to analyze them as networks. Network analytics can, for example, be used to mine for communities in social media, tracing information diffusion and opinion formation, page ranking for search, or to detect abnormal or suspicious connections, spammers, etc. Finally, web usage mining is the process of applying data mining techniques to capture the identity or origin of website visitors along with information about how they view and interact with a site's pages and features. Important business intelligence can be extracted from web server logs, such as customer purchasing patterns, user demographics, and demand trends to mention a few.

Technical content **

See also objective in the course description regarding knowledge, skills and competences

Relation of other project/courses and semesters

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Duration and expected work load

Since it is a 5 ECTS course, the work load is expected to be 150 hours for the student.

The course is designed to cover 5 ECTS, with the three main areas (web content, web structure, and web usage) given approximately equal weight. More specifically, the course will consist of 11 lectures of two hours, each followed by a two hours exercise session. These exercises will support work on a 'larger exercise' associated with each of the three main areas. The 'larger exercises' should be a valuable supporting aid for the final examination. To allow sufficient time for you to complete these hands-on exercises (with a reasonable 5 ECTS workload); the course is structured to allow for additionally 11 slots of four hours assigned to work on these hand-in exercises.

Preconditions

The preconditions are given in the study curriculum

Exam

Form of examination can be seen in the study curriculum

The course is expected to have an oral examination

Allowed aids and other information for the examination

Exact details can be seen on the course homepage in MOODLE

Course activities (lectures etc.)

The lectures and the activities belonging to this course can be seen in the lecture plan