



Human-Computer Interaction

Study plan for third-cycle subject

The subject plan was approved by Fakultetsnämnden (Faculty Board) November 30, 2010. Valid from Spring 11.

Subject title

Human-Computer Interaction (Människa-datorinteraktion)

Subject description and programme outcomes

Scientific field

Human-Computer Interaction is the study of the interaction between people and computerised systems. The field is interdisciplinary and include partly computer science methods and tools for design of customized systems, partly human sciences' theory and method to understand, evaluate and improve computerised systems for human usage.

The area of HCI includes studies of methods and tools for efficient realization of:

- interaction between users and computerised systems
- user groups interactions through a computerised system
- the interface between man and computer, and the relationship between different communication media in the interface
- the relationship between activities, user and the computer-aid.

The aim for the doctoral education is very good knowledge in the field human computer interaction and ability to carry out independent research and investigation in the area and its applications within different fields of the society.

The doctoral studies in HCI, together with appropriate undergraduate degree, secures the student's interdisciplinary skills and thereby a broad perspective on the area of HCI.

After completing the education the doctoral students are able to:

1. describe and explain theories, design principles and empirical results in their area of specialization,
2. formulate concrete research issues within HCI
3. use established research methods and provide new knowledge,
4. critically analyse and evaluate their own and others' research results,
5. present and discuss research results to colleagues, the public and in education,
6. analyse and take a stand in ethical and aesthetic aspects of research in computer science and act thereafter
7. participate in interdisciplinary collaboration within HCI, and show knowledge of different views on the research role in the social progress, analyse and evaluate connected issues critically.

All of the above listed skills should be developed during the supervision process. Courses contribute to develop the skills described in 1, 3, 6 and 7. To participate in seminars and journal clubs and to teach and participate in conferences, contribute to develop the skills described in 1, 4 and 5.

Description of possible specialisation

1. Human-Computer Interaction (HCI)

Specification of how the programme outcomes are to be achieved

Currently, the subject has no specializations.

Human-Computer Interaction (HCI)

Description of the specialisation

The main issue in the area of human computer interaction is, how knowledge of man and her activities should influence the design of interactive computer systems. Certain parts of the research domain are more technically oriented and include knowledge of advanced interactive systems and interfaces, while others are focused on in-depth studys of people's use of systems. Recently, design disciplins are an important influence. Also sciences regarding people and technology, such as social

view of mankind and ethnology, have obtained more central role in the multidisciplinary HCI. An important factor in the doctoral studies in HCI is human- and behavioural science methodology for user studies including methods for data collection and analysis.

Current research

Computers do not only occur on the desk but are all more often embedded in the physical environment and in other artifacts. Computers are deeply integrated in fields of technology such as telecommunications and interactive media.

The development of the computer networks has made information available for broad groups of people, and created new possibilities for social interaction. These factors increase demand on knowledge of customized design of computer technology, due to people's acceptance and use of computers in broad fields of the everyday life. The design of computer-aids for older and disabled has an increased attention where often innovative fields of technology are involved.

The research in human computer interaction at KTH is within the department Media Technology and Interaction Design.

The research is currently for example in the following areas:

- Computer-aid for communication and the collaboration (e.g. attendance in virtual environments, so-called awarenesssystem, collaborative writing, knowledge systems).
- Writing and language technology and its usage within information management, learning and education.
- Advanced forms of interaction and perceptual interfaces, e.g. gesture interaction, haptic interaction.
- Interaction between people and intelligent robots, especially service robots (in collaboration with RPL).
- Methods for user-centered design, development and evaluation of informatics.

Programme structure

The education consists of a course module and a dissertation. The course module includes 60-90 credits for Degree of Doctor and 40-60 credits for Degree of Licentiate. The dissertation usually corresponds to 150-180 credits for Degree of Doctor and 60-80 credits for Degree of Licentiate. The sum of avhandlingsdel and course module should be 240 credits for the Doctor's degree and 120 credits for Degree of Licentiate. An individual study plan should be established, updated and revised annually.

The doctoral student should participate in and contribute to the scientific activity that is carried out at the department, by attending seminars and holding a thesis seminar once a year.

Doctoral students are recommended to devote a certain amount of time (about 20%) of the doctoral studies to education in first-cycle and second-cycle studies. The activities above should be included in the individual study plan.

Compulsory and recommended courses

Courses consists of lectures, seminars, literature courses, laboratory sessions and project assignments. The courses are chosen in consultation with main supervisor regarding the research domain and the aims for the education.

Compulsory course

DM3514 Research methods in Media and communication technology and human computer interaction

Recommendations

An essential part of the courses (at least 30 credits for Degree of Doctor) should be courses for third-cycle studies in human computer interaction or adjacent subjects. It is particularly important that the courses secure the student's interdisciplinary HCI-competence within both behaviour and psycho-social theory and methodology, and fundamentals and applications in computer science. To secure this competence, certain courses can be taken within other subjects. The aim of these courses should be to give advanced competence in the conditions or broadening in some of HCI-area's application field.

KTH's local regulations for the higher education qualifications for third-cycle studies, regulates the level of courses in the course module: for Degree of Doctor, at least 75% of the credits should be third-cycle courses, for Degree of Licentiate 50%. Maximum 5 hp of first-cycle courses may be included in the doctoral degree.

Thesis

The thesis writing should be started as soon as possible. The subject for the thesis should be chosen in consultation with the subject responsible and main supervisor. The subject should be connected to the existing research at the department.

The thesis is a compulsory part of the education for third-cycle studies. This part of the education aims to develop the student's ability to give independent contributions to research, and co-operating to scientific studies within and outside his/her own subject. The thesis should contain new research results that the student has developed alone or in collaboration with others. The main scientific results should meet the required qualifications for publication in internationally renowned papers and conferences with referee system. The student's own contribution in the papers of the thesis, which has several authors, must be separately defined.

The thesis should be written in English. It can either be designed as a compilation of scientific articles or as a monographic thesis. In the previous case, there should be a written summary.

Irrespective if the thesis is intended to become a monographic or compilation thesis, international publication of achieved results should be sought during the doctoral studies.

Entry requirements and selection

General and special admission requirements and prior knowledge

To be eligible for third-cycle studies in human computer interaction academic undergraduate degree is required or a four-year university education with a relevant HCI-subject specialization, such as a Master of Engineering, Master's degree (60 credits) in HCI or computer science/computer science, behavioural science, cognitive science or communication studies.

Apart from relevant academic degree, special knowledge are required within HCI, and the technical and psycho-social implications of HCI. This knowledge can have been received either through basic higher education or in a different way.

Selection rules and procedures

The programme's degrees and examinations

Degree of Licentiate and Degree of Doctor (PhD)

Graduation for Licentiate degree and Doctoral degree is carried out in accordance with KTH's general rules.

The programme's examinations

No other compulsory tests are included in the education.