Department of Computer and
Information Science, Linköping

Graduate Studies 2001

International
Graduate School in
Computer and Information Science

International Graduate School in Computer Science

The Computer Science Graduate School is aimed at both industry and the academic world and covers the following subject areas:

*** Computer Science**
*** Computer Systems**
*** Information Science and Media**
*** Computational Linguistics**
*** Economic Information systems**
*** Information Systems Development**
*** Engineering Information Systems**

The Department runs an Industry Research School, as a special programme funded by The Foundation for Knowledge and Competence Development, and participates in the graduate schools Excellence Center in Computer and Systems Engineering (ECSEL), Graduate School for Human-Machine Interaction (HMI) and International Graduate School of Management and Industrial Engineering (IMIE). The research environment is strongly influenced by cooperation at both departmental and international levels and the department is regularly visited by guest professors and graduate students from international study programs. The aims of the graduate school are the following:

- The graduate school emphasizes the value of an integrated course of education in an area of importance for Swedish industry.The aim is to provide the student with broad competence. On completion of studies the student will have deep insights into his or her area of study as well as being well-oriented in the state of the art in related fields.
- The department has 5 divisions and 13 research laboratories and all graduate students belong to one of these. This provides an environment where the student, supported by advisors, formulates and produces his or her thesis as part of the requirements.
- In addition to a main advisor each graduate student has two deputy advisors. The advisory group can provide the student with a wider range of support than is possible with just one advisor.
- The course-work pursued is of central importance in gaining broad competence. The department offers a well-established program of about 30 courses per year. These are often of an interdisciplinary character, thus the range is not limited to the student's particular lab, but is of relevance to the department as a whole. In addition to courses of a more "technical" nature, others are given in research methodology, scientific writing, presentation technique and ethics. Each laboratory also runs courses specific to its range of interests.
- As a consequence the study program promotes communication between students pursuing different interests. Seminar series, graduate student conferences, information and assessment meetings also stimulate collaboration. Methods of continually assessing progress and results and proposing improvements to achieve this end are considered essential.
- In addition to traditional graduate studies the aims of the department have for many years included the further education of teachers and graduatt students at regional University Colleges, as well as continuing education for applicants from industry.

Further information concerning the Graduate School of Computer and Information Science can be obtained from

Lillemor Wallgren

Director of Graduate Studies Administration

Department of Computer and Information Science

Linköpings universitet, S-581 83 Linköping Sweden

Phone: +46 13281480 (281000) •Telefax +46 13142231•Internet:lew@ida.liu.se

Department of Computer and
Information Science

LINKÖPINGS UNIVERSITET

www.ida.liu.se

1. Overview of the Department

1.1 Research

The research at the Department for Computer and Information Science, IDA for short, is carried out in five divisions covering a broad spectrum of areas, several of which are multi-disciplinary. There is research in traditional computer science areas such as programming and specification languages, software engineering, databases and knowledgebased systems, real-time systems, hardware design and verification, intelligent autonomous agents and theoretical computer science. But the department also hosts research in economic information systems, information systems for businesses and other organizations and human/cognitive aspects of computer systems, e.g. natural language processing and human-computer interaction.

The Department of Computer and Information Science, IDA, was formed in 1983 as an independent department. Since then it has grown to be the largest in its area in Sweden, with several internationally well-known and recognized research groups. Several educational programmes with a large number of courses have been developed for undergraduate and graduate education.

The department has about 220 employees, with a staff of teachers and researchers of about 85 persons and administrative and technical staff of about 35 persons. There are 13 full professors in the department, eight consulting professors from outside the university and about 150 doctoral students active, about half employed in the department and the rest being industry doctoral students or employed at university colleges elsewhere.

IDA's research program has been designed to cover areas of strategic importance, both for undergraduate education as well as for the needs of society. Research in the department is organized and carried out in five divisions covering a broad spectrum of areas; several of which are multi-disciplinary. Each division is characterized by its long-term commitment to develop and maintain the knowledge within a defined area, and by its long term responsibility for individual graduate students. Within divisions there are a number of research laboratories and some smaller groups. Below, the research labs are listed by division. Each research lab have it's own web page, where full information about the lab is given.

The Division for Artificial Intelligence and Integrated Computer Systems (AIICS)

- Kunskapsbehandling (KPLAB)
-

The Division for Databases and Information Technique (ADIT)

- Engineering Databases and Systems (EDSLAB)
- Intelligent Information Systems (IISLAB)

The Division for Human-Centered Systems (HCS)

- Cognitive Systems (CSELAB)
- Natural Language Processing (NLPLAB)
- Research on Everyday-Life Informatics (Lifelabs)

The Division for Information Systems and Management (ISM)

- Economic Information Systems (EIS)
- Information Systems and Work Contexts (VITS)

The Division for Software and Systems (SaS)

- Embedded Systems (ESLAB)
- Programming Environments (PELAB)
- Real Time Systems (RTSLAB)
- Theoretical Computer Science (TCSLAB)

1.2 Contacts for the Department of Computer and Information Science

Head of the department:
Prof. Mariam Kamkar, marka@ida.liu.se
Administrative manager:
Inger Emanuelson, ime@ida.liu.se
Technical manager:
Kjell Sandberg, kjesa@ida.liu.se
Postal address:
Dept. of Computer and Information Science
Linköpings universitet
S-581 83 Linköping
SWEDEN
Telephone:
+46 13 281000 (university switchboard)
Telefax:
+46 13 142231 (building E, main fax)
+46 13 282666 (building E++)
+46 13 284020 (building B)
+46 13 284499 (building G)
Internet:
ida.liu.se
Anonymous FTP:
ftp.ida.liu.se (130.236.30.131)
remote-und.ida.liu.se (students domain)
Home page:
http://www.ida.liu.se/

1.3 Overview of divisions and research laboratories

The department hosts research in areas such as programming and specification languages, software engineering, databases and knowledge based systems, real-time systems, hardware/ software codesign and verification, artificial intelligence, intelligent autonomous agents, theoretical computer science, economic information systems, information systems for businesses and other organizations and human/cognitive aspects of computer systems, e.g natural language processing and human-computer interaction. A short review of the five divisons is given in this section

1.3.1 ADIT - The Division for Database and Information Techniques

Professor Nahid Shahmehri

ADIT conducts research concerning principles, methods and tools for defining and constructing advanced database and information management systems tailored to present and future information technology. Important research areas are databases, information management, security, text and data mining, distributed networks and artificial intelligence.

The research is performed within two research laboratories:

EDSLAB - Laboratory of Engineering Databases and Systems
Professor Nahid Shahmehri (acting lab leader)

EDSLAB conducts research on methods and theories for database support of engineering applications. Applications for this technology include mechanical, electronic, telecom, and software applications.

IISLAB - Laboratory for Intelligent Information Systems
Professor Nahid Shahmehri

IISLAB conducts research in intelligent information systems. Current projects focus on information security, information retrieval and filtering, and the representation, organization and processing of knowledge in distributed environments such as the World Wide Web.

1.3.2 AIICS - The Division for Artificial Intelligence and Integrated Computer Systems

Professor Patrick Doherty

The focus of interest for the Artificial Intelligence and Integrated Computer Systems Division is intelligent artifacts, that is, man-made physical systems containing computational equipment and software that provide them with capabilities for receiving and comprehending sensory data,

for reasoning, and for rational action in their environment. Research and teaching activities in AIICS currently include large parts of artificial intelligence, theoretical and applied logic, and computer science and programming.The AIICS division consists of one research laboratory and two additional groups supporting activities and research in computer science education (Professor Anders Haraldsson) and in electronic publishing (Professor Erik Sandewall).

KPLAB - Knowledge Processing Laboratory

Professor Patrick Doherty

Research in KPLAB focuses on the theoretical and practical aspects related to the representation and processing of knowledge. Special emphasis is placed on the specification and implementation of deliberative/reactive architectures for autonomous artifacts. Current activities include the development of nonmonotonic temporal logics for reasoning about action and change, and the specification of higher level cognitive tasks such as planning and diagnosis. Special focus is placed on the study of unmanned aerial vehicle (UAV) architectures integrated with active vision systems. Other areas of interest include model-based simulation, real-time reasoning, qualitative spatial reasoning, and approximate reasoning.

1.3.3 HCS - The Division for Human-Centered Systems

Professor Lars Ahrenberg

Research in the Division for Human-Centered Systems is aimed at studying and improving the interactions among humans, computing systems, and information resources. Human abilities constitute the goal as well as a point of departure for our research.

Our research is concerned with the development of new technologies and methods as well as the effects of new technologies for individuals, groups and society at large. Thus, research is usually multi-disciplinary, combining methods from computer and information science with perspectives from the humanities and social sciences.

CSELAB - Cognitive Systems Laboratory

Prof Erik Hollnagel

Cognitive Systems Engineering is concerned with the study, analysis, modelling and design of systems of humans and machines together in ensambles. It is not about machines alone and not about humans alone but rather about what they do together.

Lifelabs - Research on Everyday-Life Informatics

Professor Toomas Timpka

The Lifelabs group develops and studies information systems in working-life contexts, with a focus on applications in service organizations. The research has an interdisciplinary character and integrates methods from computer science, psychology and sociology. Specific areas of interest include computer-supported cooperative work, inter-organizational networks,

economic evaluations of information systems and participatory design.

NLPLAB - Natural Language Processing Laboratory
Professor Lars Ahrenberg

NLPLAB studies linguistic processing and knowledge representation from linguistic, computational and behavioral perspectives. Current applied projects concern spoken and multimodal natural-language dialogue systems and computer-aided translation.

Other research groups in the HCS Division:

ASLAB - Application Systems (Professor Sture Hägglund)
The research in ASLAB, is conducted in groups working with Human-Computer Interaction, especially usability-oriented methods for IT design and Home Communication, Cognitive modeling and Web Software Engineering, with a special emphasis on knowledge acquisition tools and advanced web programming support.

*LIBLAB - Laboratory for Library and Information Science. (*Prof. Sture Hägglund)
Research at LIBLAB, is focused on long term studies of the interactions between information technology and the generation, access to and use of information resources, in particular documents and document collections.

GIS - Geographical Information Systems. (Dr. Åke Sivertun)
Research in the GIS group is applications of geographical information systems and with algorithms for spatial data processing.

1.3.4 ISM - The Division for Information Systems and Management

Professor Birger Rapp

ISM conducts research about management issues arising from the use of modern ICT, including the impact on organisations and business, communication, knowledge development and utilisation, business oriented model- and system development, and strategic and economic management control, accounting, auditing, design of control and responsibilities applied to information usage for information provision. Research is often conducted in co-operation with industry to achieve applicable solutions to business and organisational issues. Mutual research interests for the collaborating research groups are also encouraged and supported. ISM has responsibility for courses within the areas of model building and system development, information systems and business management, and economic thinking applied to business and organisational use of information.

EIS - Economic Information Systems
Prof. Birger Rapp

The research area of Economic Information Systems involves, among other things, communication and transfer of information between people, as well as the development of

suitable information systems for this purpose. This subject also deals with the use of modern information technology and the development of structures within organizations, together with the effects of information technology on people and organizations. This involves both questions concerning economic direction and control, and the capacity of people to take in and use information as well as training.

The division of Economic Information Systems conduct research in the following main streams: Business Information Development ; Application of Transaction and Principal Agent Theory ; IT and New Organizational Structures; Simulation, Decision Support System and Control Systems of Manufacturing Flows; Business Control; IT-Economics; Internal Auditing; External Accounting and Auditing; Economic Crime Prevention; E-Business; Knowledge Management.

VITS - Development of information systems and work contexts.
Prof. Göran Goldkuhl

Research areas covered by VITS include business processes and information systems; inter-organisational relationships and electronic commerce; IT support for transportation, travelling and tourism; information systems - design & architecture; CASE/method tools; knowledge and method management. The research is mainly based on communicative and action theories and has a strong emphasis on methods for business and information systems development. Research approaches are mainly qualitative and case study based. VITS is a network research group with 30 researchers from the universities of Linköping, Borås, Dalarna (Borlänge), Jönköping, Karlstad and Örebro.

1.3.5 SAS - The Division for Software and Systems

Professor Zebo Peng

The division for Software and Systems (SaS) deals with research and education in areas such as software engineering, programming environments, systems software, embedded SW/HW systems, computer systems engineering, real-time systems and theoretical computer science.

The division has approximately 30 Ph.D. students involved in three graduate programs: computer systems, computer science and engineering information systems. The research is funded from Linköping School of Engineering but is also receiving significant external funding from TFR, NUTEK, the Foundation for Strategic Research, KK-stiftelsen and the European Commission (CEC). The research covers both basic research and projects in cooperation with industry, for instance ABB Robotics, ABB Industrial Systems, Ericsson Radio Systems, Ericsson Telecom, SKF, Saab, Saab Dynamics, Saab Combitech and several other companies. The research is carried out in four research laboratories:

ESLAB - Embedded Systems Laboratory
Prof Zebo Peng

Codesign, system synthesis, and design for test of embedded HW/SW systems; specification, design and verification of embedded real-time applications.

PELAB - Programming Environments Laboratory

Prof. Peter Fritzson

Software engineering tools and architectures, programming languages and environments, including compilers, debuggers, testing tools, parallel and real-time programming tools; software engineering methodology and process improvement.

RTSLAB - Laboratory for Real-Time Systems

Dr. Simin Nadjm-Tehrani

Systems engineering tools and methods, safety-critical systems design and analysis, formal methods, agent technologies for simulation, real-time databases, fault-tolerant systems.

TCSLAB - Theoretical Computer Science

Doc. Ulf Nilsson

Programming theory, declarative programming and specification languages, formal models and methods, algorithms and complexity.

2. Graduate studies in Computer and Information Science

2.1 General information

Graduate studies at the department consists of courses and project participation.The course programme is organized at the department level as *regular courses*, each of which is given approximately every second or third year (if possible), and *occasional courses* which depend on the profile and interests of current faculty and visiting scientists. The programme covers the areas: Computer Science, Computer Systems, Information Systems and Media, Economic Information Systems, Computational Linguistics, Cognitive Systems, Engineering Information Systems and Information Systems Development.

The department also hosts a National Graduate School in Computer Science, CUGS, with participation from Örebro University, Mälardalen University, Skövde University, Jönköping University and others. This school will gradually start its operation during the academic year 2000-2001. In addition, research groups and doctoral students participate in other national graduate schools, for instance in Langauage Technology and in IMIT in the area of Management and Information Technology.

The department also participates in several other special graduate schools aiming for interdisciplinary studies preparting also for a career outside the university, with funding from the Foundation for Strategic Research. ECSEL, Excellence Center in Computer Science and Systems Engineering, started in 1996 in cooperation with primarily the Department of Electrical Engineering. HMI, Human Machine Interaction, started in 1997 and its goal is to improve Swedish competence by educating specialists in HMI. It is a cooperation between Linköping (IDA, IKP, Tema-K) and Stockholm (NADA, DSV). IMIE, International Graduate School of Management and Industrial Engineering, has been in operation a few years with contributions from the subject area Economic Information Systems in our department. Graduate students in these schools belong to research groups in the home department, but follow a special study programme.

A special study programme for industry-based graduate students is available in the area of Applied IT and Software Engineering. This Industry Research School is funded by the Foundation for Knowledge and Competence Development and by participating companies.

About 120 Ph.D. students participate in the graduate programme, and may choose among about 30 courses given each year. The courses and seminars are normally given in English (unless all participants are fluent in Swedish).

The programme leads to one of the following degrees:

Licentiate of technology or philosophy. The requirements include 40 points (one point equivalent to one week full time studies) of completed courses and 40 points thesis work.

Doctor of technology or philosophy. The requirements are generally 80 points courses and 80 points thesis work. Most of the Ph.D. students take the licentiate degree as an integral part of their doctoral studies.

For the degree in technology, a master of engineering (4.5 years of study) is normally assumed as a prerequisite.

As an executive, there is one director of graduate studies (Ulf Nilsson). However, most of the administration and organization rests upon the director of graduate studies administration (Lillemor Wallgren). Most graduate students are employed by the department full time. They assist in undergraduate courses and other internal assignments of the divisions/laboratories, up to about 20%of their time. The rest of the time is spent on graduate courses and thesis project.

2.2 The Industry Research School

The special industry research school programme within the school of Computer Science is sponsored by the KK Foundation and a number of companies. It offers

- an industry-related, high-quality doctoral programme which is based on and utilizes the special IT competence at Linköping University.
- an effective organization coordinated with the regular graduate study programme and other strategic research efforts.
- a market-oriented and individally designed research education with extensive advisor capacity, leading to an exam as PhD, Licentiat or Master of Science.

Within the programme, twenty industry doctoral students are trained each year in Software Engineering, Computer Science and Applied Information Technology. T

An industry doctoral student is supposed to have

- a research orientation belonging to the programme areas of the industry research school and fulfill the formal requirements necessary to be accepted as a doctoral student within one of the academic subjects affiliated with the school.
- a well-defined connection to a company, which contributes with resources according to a formal contract.
- an approved application to the industry research school, an assigned scientific supervisor and an individual study plan, against which an annual follow-up of results is performed.

As applicants we welcome experienced professionals from industry as well as newly examined undergraduate students. As an industry doctoral student, you may be employed either by the university or by a company.

2.3 The Graduate Studies Programme Fall 2001

The presentation in later sections contains the following types of courses:

- **General graduate courses given by the department**
- **Graduate courses given by each division within the department**
- **Graduate courses at ECSEL, HMI, IMIE, etc**
- **Recommended Master Courses**

In addition to the graduate study courses given in the Department of Computer Science, graduate students may also take courses from other departments, in particular courses from the special graduate schools ECSEL, HMI, IMIE. These courses will be found at their web addresses (see chapter Graduate course programmes at ECSEL, HMI, IMIE).

Main seminar series and seminars in the divisions.

The seminars are announced by e-mail, and occasionally by special announcement. They are strongly recommended for graduate students, and although the do not automatically give credit points in graduate studies, they are a necessary ingredient in the PhD training.

2.4 Contact for graduate studies information

Further information concerning the contents of this program can be obtained from Lillemor Wallgren, phone 013- 28 14 80, Ulf Nilsson, 013-28 19 35, Britt-Inger Karlsson, tel. 013-28 17 06 or for a particular course from the person responsible for that course.

Contact information: Lillemor Wallgren
Director of Graduate Studies Administration, Department of Computer and Information Science
Linköping University, S-581 83 Linköping, Phone: 013-281480, Fax: 013-142231, E-mail: lew@ida.liu.se

IDA GRADUATE COURSES
Spring 2001

Avhandlingsseminarier

Cognitive Systems Engineering

Composing Software Components

Hybrid Systems

Industrial Project Management

Kunskap och handling

Kunskapsprojektering och vetenskapsteori

Model Based Database Application Development

Modern AI Planning

Presentation Technique (intensive course)

Qualitative Approaches to HCI (intensive course)

Real-Time Operating Systems

Selected Notions in the Theory of Computing

Strategic IS and OR

Teoridriven, induktiv och modelleringbaserad forskning

Avhandlingsseminarier

Lectures:

20 h

Recommended for

Kursen vänder sig till forskarstuderande som arbetar med sin lic- eller doktorsavhandling. För att få delta på kursen behöver kursdeltagare inte ha färdiga avhandlingskapitel, men ett synopsis eller utkast till sin avhandling skall finnas.

The course was last given:

HT 2000

Goals

Huvudsyftet med kursen är att deltagarna får delar av sina pågående avhandlingsarbeten (lic- eller doktorsavhandling) granskade av en utsedd opponent samt av övriga deltagare. Ett annat viktigt syfte är att deltagarna får träning i att opponera på andra arbeten.

Prerequisit

Inga.

Organization

Kursen genomförs i seminarieform med presentation, opposition och diskussion.

Contents

Seminariebehandling av utkast till avhandlingsbidrag. Presentation och opposition. Varje bidrag behandlas i ungefär 45 minuter. Kursdeltagare förväntas aktivt delta i diskussioner kring struktur och innehåll i avhandlingar.

Literature

Presenteras senare.

Teachers

Göran Goldkuhl, Stefan Cronholm.

Examiner

Göran Goldkuhl.

Schedule

Vårterminen 2001.

Examination

Avhandlingsseminarierna hålls i kursform och ger doktorandpoäng beroende på aktivitetsgrad. Opponentroll: Skriftliga oppositioner 1-2 sidor. Respondentroll: Efter seminariet skriver respondenten ett lärpapper, som sammanfattar de viktigaste kommentarerna från seminariet.

Credit

3 credits.

Cognitive Systems Engineering

Lectures:

27 h

Recommended for

Graduate and doctoral students.

The course was last given:

Fall 1999.

Goals

To provide a unified presentation of the concepts and methods of Cognitive Systems Engineering (CSE). CSE is a t echnical discipline that offers a coherent view on the analysis, design and evaluation of complex human-machine systems, which goes beyond human factors, human-machine interaction and HCI.

Prerequisites

Graduate status as HMI student

Organization

Guided discussions based on reading of prepared material. Case studies and examples will be used to illustrate the practical application of the main concepts and methods.

Contents

The course presents main concepts, data, and methods of Cognitive Systems Engineering. The concepts are the basic hypotheses and assumptions about the domain of human work. The data define the empirical basis for CSE, and thereby provide the justification for the concepts.

The methods, finally, refer to the consistent and systematic ways in which the concepts and the data of CSE can be applied. The application can have a practical or utilitarian purpose such as in design, i.e., the specification and implementation of a specific (joint) cognitive system. It can also have a more scientific purpose, such as improving the understanding of the set of causes that have led to a specific consequence, or understanding the way in which various aspects or conditions interact, for instance in the development of automation. Focus on the use of CSE for interface design and evaluation, development of tools and support systems, risk and reliability analysis, and accident investigation.

Literature

Hollnagel, E. and Woods, D. (in preparation) Cognitive Systems Engineering.
Selected papers.

Teachers

Erik Hollnagel

Examiner

Erik Hollnagel

Schedule

Spring 2001.

Examination

Attendance + term paper analysing and specifying decision support for a chosen application.

Credit

5 credits.

Composing Software Components

Lectures:

12 h.

Recommended for

Graduate Students.

The course was last given:

New course.

Goals

According to a list of well-defined criteria, this course evaluates several modern component systems (CORBA, DCOM, Java Beans, EJB) and several modern research areas in software engineering (Architectural languages, aspect-oriented programming, view-based programming). The criteria reveal surprising strengthes and weaknesses of those approaches. The course enables the student to get a quick overview, to compare, and to assess majortrends in the software engineering of today.

Prerequisites

Modern programming languages, for instance object-oriented concepts.

Organization

The course will be mainly structured as a sequence of lectures. There is no explicit lab work planned, butstudents are encouraged to experiment with the above mentioned systems on their own. The course will be given in English.

Contents

In this course, we study several modern component systems for software. In this course, we study several modern component systems for software. Starting from classical systems (such as Corba, DCOM, and Beans) we introduce modern software architecture systems, subject-oriented programming, aspect-oriented programming, and the LambdaN-calculus. For the construction of efficient systems, invasive software composition is investigated. All systems are evaluated uniformly according to a list of requirements for software construction which reveals the strengthes and weaknesses of the systems.

Literature

Literature references will be given in the course.

Teachers

Uwe Assmann

Examiner

Uwe Assman

Schedule

Spring 2001.

Examination

3 credit points will be awarded after passing a written test or an oral examination held at the end of the course,depending on the number of participants.

Credit

3 credits.

Hybrid Systems

ECSEL

Lectures:

16 h

Recommended for

Students who want to get an overview over the diverse field of hybrid systems.

The course was last given:

New course.

Goals

To get an overview over different approaches to hybrid systems.

Prerequisites

Automata theory, basic logic (for example the foundational course "Selected notions in the theory of computing"), basic theory about continuous systems (for example the foundational course "Continuous systems").

Organization

Seminars with presentations by participants.

Contents

Different approaches to hybrid systems both from computer science and control theory.

Literature

Selected papers about hybrid systems and papers selected by the participants.

Teachers

Simin Nadjm-Tehrani, Inger Klein

Examiner

Simin Nadjm-Tehrani

Schedule

Spring 2001.

Examination

Active participation and seminar presentation.

Credit

4 credits.

Industrial Project Management

Lectures:

30h och internat 3 heldagar.

Recommended for

Alla.

The course was last given:

VT 2000.

Goals

Kursen bygger på växelverkan mellan teori och praktik och deltagarnas aktiva engagemang. Den syftar till att: 1. Ge insikt om och perspektiv på kunskapsbildningen inom projektledningsområdet, och dess tillämpningar. Det forutsätter välplanerade litteraturstudier, reflektioner och deltagande i tentamen. 2. Eget projektarbete inom ett specialområde av effektiv projektledning avrapporterat i form av uppsats. Det är en fördel om detta arbete kan utgå från och bearbeta erfarenheter av pågående eller avslutat industriellt projekt inom berörda företag. 3. Ökad förmåga att omsätta teoretisk kunskap i handling och praktik, att delta i industriella projekt under osäkerhet, komplexitet och krav på tvärfunktionellt samarbete. Det föurtsätter aktiv medverkan i kursens övning i samspel, kommunikation och ledarskap, och att deltagarna därvid vinnlägger sig om ödmjukhet, generositet och vilja att lyssna och stödja andra.

Contents

Modern industriell projektledning handlar i hög grad om interdisciplinär, internationell verksamhet, vare sig det rör sig om leveransprojekt, utvecklings- eller upphandlingsprojekt. Kursen kommer att bygga på deltagarnas egna aktiviteter, liksom exempelvis kursen TQM och lärande organisationer. Den kall ge förståelse av organisation, ledning och styrning av olika typer av industriella projekt och förmedla insikt om samspelet mellan projekt och företagets basorganisation, och hur detta påverkar möjligheter att nå projektmål och generera långsiktigt organisatoriskt lärande. Avsikten är dels att göra en rejäl fördjupning i litteraturen om projektledning och projektledningsproblem (inklusive de klassiska "planning disasters"), dels att ha en nära koppling till praktiken genom att ta avstamp i aktuella industriprojekt inom regionen. Här kommer vi också att vända oss till PMEX-deltagarna, och bjuda hit några av dem liksom andra aktiva projektledare.

Literature

Meddelas vid planeringsmötet.

Teachers

Christian Berggren, Jonas Söderlund, Vivian Vimarlund.

Examiner

Christian Berggren

Schedule

Planeringsmöte 6 april. Ett kurstillfälle per vecka i vecka 18, 20, 22, 24. Vilka dagar och tidpunkter kursen ska äga rum dessa veckor bestäms vid planeringsmötet, liksom fortsättning av kursen under höstterminen.

Examination

Litteraturtentamen. Projektarbete i form av uppsats. Artikelreferat och reflektioner.

Credit

5 credits

Comments

Deltagarna är begränsade i antal eftersom kursen innehåller vissa moment där antalet deltagare ej får vara för stort.

Kursen ges i samarbete med Santa Anna IT Research Institute.

Kunskap och handling

Lectures:

24 h

Recommended for

Kursen vänder sig till doktorander i informatik/informationssystemutveckling samt andra ämnen vid Internationella Handelshögskolan och Linköpings universitet.

The course was last given:

VT 1998.

Goals

Kursen syftar till att öka förståelsen av samspelet mellan kunskap och handling, dvs olika kunskaps- och handlingsteorier.

Prerequisites

Inga särskilda krav.

Organization

Föreläsningar, seminarier. Kursen kommer huvudsakligen att genomföras på CMTO, Linköpings universitet..

Contents

Pragmatisk kunskapsteori
Tyst kunskap, rekonstruktion av tyst kunskap
Praktisk kunskap
Samspel kunskap - handling
Handlingsteorier
Handlingars intentionalitet och flerfunktionalitet
Värde och handling
Reflektion och handling
Praktikteori, praktikbegreppet
Professioner, tysta kunskaper och kompetent handlande - yrkeskunnande

Literature

B Rolf: Profession, tradition och tyst kunskap, Nya Doxa

B Molander: Kunskap i handling, Daidalos
G Goldkuhl: Praktikteori som forskningsgrund, rapport IHH/CMTO
G Goldkuhl & A Röstlinger: Praktikbegreppet: En praktikgenerisk modell som grund för teoriutveckling och verksamhetsutveckling, rapport IHH/CMTO
Ytterligare rapporter

Teachers

Göran Goldkuhl.

Examiner

Göran Goldkuhl.

Schedule

Vårterminen 2001.

Examination

Skrivande av rapport som seminariebehandlas.

Credit

5 poäng.

Kunskapsprojektering och vetenskapsteori

Lectures:

32 h

Recommended for

Kursen vänder sig till forskarstuderande inom informationssystemutveckling/informatik samt andra med intresse för forskningsplanering, kunskapsteori och forskningsmetodik.

The course was last given:

VT 2000

Goals

Kursen skall ge kunskaper och färdigheter avseende planering av forskningsarbete (kunskapsprojektering) samt förståelse för dess kunskapsteoretiska grunder. Kursen skall också ge introduktion till vetenskapsteoretiska begrepp och synsätt, för att ge förbättrade förutsättningar att bedriva egen forskning.

Prerequisites

Inga särskilda förkunskapskrav.

Organization

Kursen består av två delkurser; kunskapsprojektering och vetenskapsteori. För kunskapsprojekteringen gäller en obligatorisk del och en frivillig fördjupningsdel. Den obligatoriska delen innebär utförande av kunskapsprojektering för en forskningsuppgift. Den frivilliga delen kan genomföras som exempelvis en mindre empirisk studie.

Contents

Kursen fokuserar forskningsarbete som kunskapsutveckling och särskilt problemställningar inom samhällsvetenskaplig kunskapsbildning. Väsentligt moment i kursen är inlärning och tillämpning av en metod för strukturerad och reflekterad forskningsplanering (kunskapsprojektering). Här ingår:

Behov av och innebörd av kunskapsprojektering
Kunskapsprojektering som forskningsplaneringsprocess
Kunskapsteoretiska grunder för kunskapsprojektering
Metodik/arbetsfaser i kunskapsprojektering
Hantering av forskningsfrågor, perspektivanalys

Kunskapskaraktärisering (analys av olika kunskapsformer)
Val av forskningsstrategi och forskningsmetoder
Olika typer av undersökningar (klassificering, strategier, tillförlitlighet)
Olika undersökningsmetoder (främst intervju, observation, källanalys)
Kursen behandlar även vetenskapsteori, där följande ingår:
Vetenskap som process (forskning) och som produkt (kunskap)
Viktiga kunskapsteoretiska begrepp; paradigm, teori, lag, hypotes, empiri
Olika kunskapsformer: förklaringar (kausala, funktionalistiska, intentionalistiska), kategoriell kunskap (definitioner, klassificeringar), normativ kunskap, kritisk kunskap
Samspel teori - empiri (hypotesprövning ex ante - ex post; induktion - deduktion)
Vetenskapliga skolbildningar; historisk utveckling
Vetenskaplig kunskapsutveckling (evolution vs revolution)
Rationalitet och argumentation; argumentationsteori
Vetenskapliga kriterier; inomvetenskapliga kriterier vs samhällelig relevans
Forskarroller; forskningsetik

Literature

Föllesdal, Wallöe, Elster: Argumentationsteori, språk och vetenskapsfilosofi, Thales
Gilje N, Grimen H: Samhällsvetenskaplig förutsättningar, Daidalos
Repstad: Närhet och distans, Studentlitteratur
Goldkuhl: Kunskapande, kompendium
Ytterligare artiklar i samhällsvetenskaplig metodik

Teachers

Karin Axelsson, Anders Avdic, Göran Goldkuhl.

Examiner

Göran Goldkuhl, Karin Axelsson, Anders Avdic.

Schedule

Vårterminen 2001.

Examination

Utförande av arbetsuppgift som dokumenteras i skriftlig rapport. Arbetsuppgiften bör i första hand bestå av utförande av en kunskapsprojektering med egen vald inriktning (obligatoriskt moment). Arbetsuppgiften kan fortsättas med genomförande av en mindre empirisk undersökning. Resultat från denna undersökning ska dokumenteras tillsammans med särskild analys av forskningsmetodik och kunskapskaraktärisering (frivillig fördjupning). Deltagande på seminarier. Den vetenskapsteoretiska delen av kursen examineras genom en uppgift i vetenskapsteoretisk analys som dokumenteras i skriftlig rapport.

Credit

3 poäng (obligatorisk del) + 4 poäng (vetenskapsteori)

Comments

Kursen kommer att ges vid Örebro universitet.

Model Based Database Application Development

Lectures:

16 h

Recommended for

All ECSEL students. Final year C and D undergraduate students.

The course was last given:

New course

Goals

Provide a theory, a method and practical skills to develop large domain specific database applications and maintain them over long time, using small manpower resources. Provide an understanding of the long-term maintenance problems and challenges. Develop skills in analysing a software architecture, extract the design patterns and implement model driven source code generators for automatic model based software implementation. Develop skills in writing declarative SQL-based source code generators. Exercise different roles of model based database application development within a project team which implements a practically useful database application. During the course, students are encouraged to test their new skills and tools on modeling and implementing a database application supporting one of their own research areas.

Prerequisites

ECSEL Graduate Course: Fundamentals of Modern Database Systems, or Undergraduate database course TDDB38. Related Courses Object-Oriented Development of Usable Systems, basic course.

Organization

16 h lectures, 10 h labs. Team based programming project of 1-2 full time weeks per student. 2 h project presentation seminars and 4 h experience sharing seminars held by the teams.

Examination

Written examination (1p). Teamwise mandatory deliverables from programming projects and participation in team lead seminars (4p).

Contents

Introduction and motivation, including the challenge to develop and maintain database software support for complex enterprise- and research area specific know-how for which commercial software is not available. Outline of model based development and long term maintenance of domain specific software. Mapping of Entity-Relationship models to UML. Object-oriented domain modeling. Practical skills in an UML-compatible CASE-tool. Overview of the client-server & 3-tier software architectures. Hands-on experience with one benchmark database application implementation for each of the of the two architectures. Design patterns for basic functionalities within a client-server and a 3-tier architecture. Design pattern extraction from benchmark database applications. One, two and 3 step SQL-based source code generators. Laborations for acquaintance and preparations for the project. Source code generator maintenance. Baselines and configurations. Considerations for production database system upgrades. How do we use this knowledge to leverage our own research! Project presentations by teams. Experience sharing on seminars leads by the project teams.

Projects

Projects are chosen by teams of 3-6 students. Within each team, students can focus on one or several roles of their particular interest. For instance; 1) manage project, 2) develop an object-oriented information model for a particular domain, 3) research architectures/platforms-, 4) implement-, 5) validate-, 6) performance test-, source code generator baselines for one the following :

UML -> Database implementation in SQL99.

UML -> Enterprise Java Beans business logic for the application server layer in a 3-tier architecture.

UML -> Basic form based JavaBeans GUI s.

The projects are validated and confirmed with tests on a benchmark UML-model in a realistic database production environment. Designs, interesting implementation decisions, benchmarking results and experiences are presented by the software modules are available for study and reuse in the team projects. Teams are encouraged to cooperate to create a larger whole.

Literature

Collection of papers and a compendium. Sample software for study.

Teachers

Olof Johansson (ojo@ida.liu.se) and invited speakers.

Examiner

Olof Johansson

Schedule

Spring 2001.

Examination

Written examination (1p). Team wise mandatory deliverables from programming projects and participation in team lead seminars (4p).

Credit

5 credits.

Modern AI Planning

Lectures:

26h.

Recommended for

Graduate and undergraduate students with an interest in AI. ECSEL students are most welcome.

The course was last given:

New course.

Goals

The course aims to give an introduction to the planning problem in AI, and to the many techniques that have recently been developed to deal with it.

Prerequisites

Some previous experience with logic is useful. The knowledge provided by any basic AI course should suffice.

Organization

The course consists of a number of lectures/seminars and a lab course.

Beyond that, the organization of the course is left open-ended; details concerning the schedule and the presentation of the course material (such as whether there should be teacher-given lectures or student presentations or both) will be decided by teacher and course participants together at the start of the course.

Contents

The planning problem in AI. Search and basic planning algorithms (forward-chaining, regression, partial-order). Graphplan and heuristics. SAT and CSP encodings. Domain analysis. Abstraction and goal ordering. Hierarchical planning and domain-dependent search control. Extensions to uncertanity and metric time.

Literature

A bibliography, with help of which articles will be selected by the teacher and the participants.

Teachers

Patrik Haslum, (one or, if possible, two) guest lecturers.

Examiner

Patrick Doherty

Schedule

Spring 2001.

Examination

A set of assignments, consisting mostly of experimenting with existing planning systems.

Credit

3-5 credits, depending on assignments.

Presentation Technique

Lectures:

30 h.

Recommended for

Graduate students.

The course was last given:

Fall 2000.

Goals

To achieve better presentations of your own reserach at international conferences and local meetings. To feel confident in front of an audience. To practise introduction of speakers and dealing with questions.

Prerequisites

None.

Organization

Presentations, seminars, video recordings, discussions and evaluations. The schedule will be discussed at the first lecture.

Contents

Different presentation techniques. Mind-mapping, flash-cards and other preparations. Body language, visual aids and vocabulary expansion.

Literature

Powerful presentations/ Jöns Ehrenborg-John Mattock.

Teachers

Ingela Dellby.

Examiner

Ingela Dellby.

Schedule

Spring 2001.

Examination

Presentations and active participation in workshops, discussions and continuous evaluation of performances.

Credit

3 credits

Comments

Intensive course. Maximum 10 participants.

Qualitative Approaches to HCI

Recommended for

Graduate student .

The course was last given:

Spring 1999.

Goals

The course will discuss the intellectual and pragmatic yields qualitative approaches, particularly ethnography, the study of human-computer interaction. The course is inteded to help students to become more competent in assessing the reserach of others. By looking at the strengths and weakness of this body och literature, it will also help student design and argue for their own research and research agendas.

Prerequisites

Graduate student status.

Contents

This graduate seminar course will introduce students to qualitative approaches to HCI. As such there will be no prerequisities. The readings will start with Suchman's Plans and Situated Actions (1987) and will run chronologically through some of the HCI literature. The course would cover some of the Scandinavian and N. American approaches to HCI. The course will also treat current developments and research in HCI as development out of HCI's earlier history and paradigms. Given the breadth and depth of the HCI literature, the class will focus on the CSCW research literature. One topic that the course will discuss is participatory design The course will look at Scandinavian (Bodker, Kensing/Simonsen) and N. American (Blomberg) approaches to participatory design as a practical research activity. In particular, the course will look at the contributions ethnography can make to participatory design.

Literature

Selected readings.

Teachers

James M. Nyce.

Examiner

James M. Nyce

Schedule

Spring 2001.

Examination

Class work will include assigned readings, seminar participation (2 points) and one research paper (1-3 points). Course credit may be changed.

Credit

2 + 3 credits

Comments

Intensive course.

Real-Time Operating Systems

Lectures:

24 h

Recommended for

Recommended for doctoral students in computer science and engineering students with a basic background in real-time systems or operating systems.

The course was last given:

New Course

Goals

The aim of this course is to give students insight in recent research advances in the area of operating systems designed for real-time and embedded systems.

Prerequisites

Undergraduate course in real-time systems and operating systems.

Organization

The format of the course is a seminar course, given in a crash course format. The course will be given as three 2-3-day seminars. Lectures are given by the examiner. Participants are expected to actively participate in discussions and present papers during the course. The opportunity of doing an optional assignment will be given. The assignment will give 1 or 2 credits.

Contents

This is a course on advanced issues in operating systems, high-lighting the state-of-the-art in the area. The course is about theoretical and practical aspects and requirements of operating systems that are to be used in real-time and embedded computing systems. The theoretical part will cover required/desirable time-cognizant mechanisms. In particular, the course will focus on the following: fault-tolerance support at the operating system level; distributed operating systems mechanisms: migration protocols and distributed scheduling/allocation protocols; resource management and process synchronization; and thread support We will study the state-of-the-art with respect to commercial real-time operating systems and their research counterparts. Similarly, we will distinguish general-purpose operating systems (e.g., Windows NT, Solaris, and HP-UX) vs application specific operating systems (e.g., VxWorks, OSEDelta, and EPOC, RT-Linux, pSOS, ulTRON etc).

Literature

Research papers.

Teachers

Jörgen Hansson and invited lecturers.

Examiner

Jörgen Hansson.

Schedule

Spring 2001.

Examination

Preparation of written questions based on material studied before lectures. Term paper.

Credit

3 credits + 1-2 credits for optional assignment

Comments

The condensed format of the course will facilitate external participation. The course will be offered to ARTES students. ARTES is a national Swedish strategic research initiative in Real-Time Systems supported by the Swedish Foundation for Strategic Research (SSF)

Selected Notions in the Theory of Computing

Lectures:

38 h

Recommended for

Foundational course for ECSEL. Recommanede for PhD students with a non-computer-science background, e.g. students from IMIE.

The course was last given:

Fall 1997.

Goals

The course presents selected topics in theory of computing. The basic concept in this context is a notion of discrete computation, or discrete process. At an abstract level it can be seen as a sequence of transitions between states triggered by some events. Thus, we will discuss systems consisting of states and transitions observing certain rules. Such systems turned out to be very useful, for example in modelling industrial processes, in design of digital circuits or in compiler construction. The course will survey several specific classes of the systems which are of particular importance for the applications. Computations performed by computers follow certain algorithms described by the programs controlling the computations. The notion of algorithm is thus another basic concept in the focus of this course. It has been formalized by Alan Turing in terms of a state transition system known as Turing machine. We discuss how formalisation of the notion of algorithm allows one to show that some practically interesting problems are undecidable (i.e. there are no algorithms solving them), or intractable (there are no sufficiently efficient algorithms). In addition we survey some commonly used data structures, like lists, trees, stacks, and some commonly used algorithms for searching and sorting. On these examples we demonstrate techniques for complexity analysis of the algorithms.

Prerequisites

MSc in a non-computer-science area and some programming experience.

Organization

Each module will include a number of lectures, a homework assignment and a closing session where the participants will be asked to summarize the main concepts of the module, to discuss relations between them and to discuss solutions to the homework assignments.

Contents

The course consists of the following modules.

1. Abstract Automata and Formal Languages. This part is motivated by applications such as modelling of discrete event systems or compiler construction It presents the classical transition systems: Finite Automata (deterministic and nondeterministic) and Push-Down Automata, and the corresponding languages: regular and context-free. These languages are also characterized by grammars, commonly used as a language specification formalism.

2. Petri Nets and the modelling of systems. Petri Nets provide a natural formalism for modelling of systems. We survey basic concepts and discuss some applications of the formalism, e.g. for design of digital circuits or for modelling of concurrent processes, and their synchronisation. We show relation to abstract automata discussed in Part 1.

3. Algorithms. We discuss the notions of algorithmic problem, algorithm and data structure. We illustrate them by examples of some comonly used algorithms on data structures. We survey some basic notions of complexity theory and discuss their relevance for analysis of algorithms.

4. Tractability and decidability. We discuss Turing machines as formalisation of the notion of algorithm. We show its relevance for studying decidability and tractability of algorithmic problems. We present an important concept of NP-complete problem. Many practically relevant algorithmic problems, like planning and scheduling fall in this class. We give examples of such problems.

Literature

H.R.Lewis and C.H. Papadimitriou Elements of the Theory of Computation, Prentice Hall, 1998.

J.L.Peterson Petri Net Theory and the Modelling of Systems , Prentice Hall, 1981, Chapters 1-4. (For Part 2 of the course))

T. Murata Petri Nets: Properties, Analysis and Applications Proc. of the IEEE, vol. 77 No.4 (1989).

D. Harel Algorithmics, 2nd edition, Addison Weseley, 1992 Chapters 1-9. (For Parts 3 and 4 of the course)

Teachers

Jan Maluszynski

Examiner

Jan Maluszynski

Schedule

Spring 2001.

Examination

Written solutions to the homework problems are to be submitted to the examiner at latest at the closing session where the solutions are to be discussed. No solutions will be accepted after the deadline.

Credit

Each module gives 1.5 credits. To obtain the course credits it is necessary to deliver a complete solution to the homework assignment for every module taken, to participate in and to contribute to the closing sessions of the taken modules.

Strategic IS and OR

Lectures:

5 heldagar.

Recommended for

Forskarstuderande.

The course was last given:

Ny kurs.

Goals

Kursen vill belysa det nära sambandet mellan strategisk OR och IS modeller.

Organization

Föreläsningar.

Contents

Det finns ett antal välkända framgångsrika IS-investeringar. Tankegångarna bakom dessa IS-investeringar är ofta genererade från OR-modeller. Denna kurs inför bereppet strategiska OR-modeller och jämför detta med strategiska IS-modeller.

Literature

Beslutas senare.

Teachers

Professor Peter Bell, Canada.

Examiner

Birger Rapp.

Schedule

Spring 2001.

Credit

5 credits

Comments

Begränsat antal deltagare.

Teoridriven, induktiv och modelleringbaserad forskning (TIM)

Lectures

ca 30 h

Recommended for

Forskarstuderande inom informatik och informationssystemutveckling, samt andra med intresse för empirisk forskning och teoriutveckling. Kursen är seminariebaserad och är även öppen för disputerade som önskar fördjupa sina kunskaper.

The course was last given

HT 2000.

Goals

Kursen skall ge ökade kunskaper och färdigheter avseende datainsamling, dataanalys och teoriformule-ring vid forskningsarbete samt ökad förståelse för hur man kan kombinera teoridrivet och induktivt-empiribaserat och modelleringsbaserat angreppssätt. Kursen avser att vara ett konkret stöd för kursdeltagare att analysera empiriska fall och utveckla teori förutom att bidra till ökade färdigheter i dessa avseenden. Kursen har ett uttryckligt bimål att öka förmågan att kritiskt granska samt skriftligen kommentera och muntligen kommunicera kring vetenskapliga arbeten.

Prerequisites

Inga speciella förkunskaper behövs. Samtidigt bör påpekas att kunskaper inom vetenskapsteori och forsknings-metodik (t.ex motsvarande kurserna Vetenskapsteori, Kunskapsprojektering samt Kvalitativ analys och teoriutveckling) befrämjar förståelse av kursens innehåll. Kursen bygger också på (vad avser fallseminariedelen) att kursdeltagarna har egna fall att redovisa, dvs empiriska resultat från pågående eller genomförd forskning.

Kursen kan samläsas med kursen "Avhandlingsseminarier". Kursen kompletterar "Avhandlingssemina-rier" genom att fokusera analysprocessen före skrivande av avhandlingskapitel.

Organization

Kursen bedrivs seminariebaserat. Kursen består av två typer av seminarier:

Fallseminarier och litteraturseminarier

Fallseminarier innebär att kursdeltagare redovisar pågående forskning. Redovisning och analys görs av stegen från empiriska data till beskrivningar av data och vidare till abstraherade kategorier och formulerade teorier. Särskilt fokus riktas mot användning av teorier och modelleringstekniker för insamling och analys av data och för teoriutveckling. Fallseminarier utnyttjar kursdeltagares fall och avser att bidra till utveckling av aktuell fallanalys samt därmed utgöra en illustration av lämpliga tillvägagångssätt. De kursdeltagare som deltagit med fall på ett seminarium dokumenterar lärdomar från fallseminariet ("lärpapper").

Litteraturseminarier innebär granskning av litteratur med relevans för kursens syften. Litteratur kan avse vetenskapsteoretiska, forskningsmetodologiska, ämnesteoretiska eller modelleringsinriktade frågor. Till varje seminarium granskas ett utvalt och fastställt litteraturstoff (artiklar och/eller bokkapitel). Kursdeltagare granskar litteraturen och skriver en granskningsrapport till aktuellt seminarium. Granskningsrapporten skall innehålla 1) rekonstruktion och analys av de viktigaste teserna/principerna och använda begreppen, 2) en kritisk värdering samt 3) en relatering till kursens tema samt egen forskning. Gransk-nings-rapporterna distribueras till kursdeltagarna före seminariet så att läsning av dessa granskningsrapporter kan ske innan seminariet. På seminarierna diskuteras aktuell litteratur och de framställda granskningsrapporterna. Jämförelse sker mellan de olika granskningsrapporterna.

Varje kurstillfälle (normalt 4 timmar) kommer att bestå av både fallseminarier och litteratur-seminarier.

Contents

Kursen behandlar empiriska och teoriutvecklande faser av forskningsarbete och samspel mellan dessa. Särskilt fokus riktas mot möjligheter att kombinera ett teoridrivet och ett induktivt-empiriskt och ett modelleringsbaserat angreppssätt (TIM) vid dataanalys och teoriformulering. Vad gäller datainsamling görs en primär avgränsning till kvalitativa fallstudier, men andra tillvägagångssätt är möjliga att tillämpa inom en TIM-ansats. Kursen avser att fokusera, problematisera och vidareutveckla den kombinerade forskningsansats (TIM) som har kommit att utvecklas inom forskarstudieämnet Informationssystemutveckling och forskningsgruppen VITS. Kursen är starkt tillämpningsorienterad till sin karaktär och har forskningsutvecklande syften; såväl på individnivå som för ämnesområdet.

Enligt TIM-strategin så skall sålunda forskningsprocessen bedrivas med aktivt stöd från generativa teorier med relevans för forskningsdomänen, ett rikt empiriskt datamaterial som skall behandlas med ett öppet och nyfiket sinne, strukturerade och åskådliggörande modeller (bilder och texter) som konceptualiserar och abstraherar data med stöd av explicita notationer.

Kursen behandlar mer specifikt följande moment:

TIM som en särskild form av abduktiv forskning
Teoribegreppet
Användning av teorier vid datainsamling, dataanalys och teoriutveckling

Exempel på teorier som brukas som aktivt teoristöd (handlingsteori, affärsaktsteori, praktikteori, talaktsteori)
Diagnostiska kvalitativa fallstudier
Kvalitetssäkring av empiriska data
Triangulering
Kvalitativ analys (Grounded Theory och andra ansatser)
Behov av kunskapsmodellering
Modelleringstekniker för beskrivning av empiriska data, kategorier och teorier (t.ex begrepp grafer, teorigrafer, handlingsgrafer, målgrafer)
Transparens i analys och redovisning av empirisk och teoriutvecklande forskning
Literature
Artikar och bokkapitel kommer att väljas utifrån kursens syften och de behov som uppstår under kursen.

Teachers

Göran Goldkuhl

Examiner

Göran Goldkuhl

Schedule

Vårterminen 2001.

Examination

Deltagande på fallseminarier och litteraturseminarier. Presentation av egna fall. Dokumentering av lärdomar efter fallseminarier ("lärpapper"). Granskningsrapporter till litteraturseminarier.

Credit

3-5 credits, (efter insats).

Comments

Kursen är ett samarbetsprojekt mellan ämnesområdet informatik vid Internationella Handelshögskolan (IIH) i Jönköping och ämnesområdet informationssystemutveckling vid Institutionen för datavetenskap, Linköpings universitet. Kursen genomförs på IHH i Jönköping.

IDA GRADUATE COURSES
FALL 2001

GIS/GeoInformatik

GIS in Business and Service Planning

Home Informatics

Information Extraction and Text Mining

Semiotics: History, Basic concepts and Computer Applications

Avhandlingsseminarier

Business Modelling i teori och praktik

Ekonomisk brottslighet

Informationssamhällets infrastruktur

Inter-organiskatorisk samverkan och elektroniska affärer

Kvalitativ analys och teoriutveckling

Teoridriven, induktiv och modelleringsbaserad forskning (TIM)

Utrednings- och undersökningsmetodik

Constraint Programming

Design Patterns

Distributed algorithms for fault-tolerance

Hardware/Software Co-Design

Introduction to bioinformatics

Aspekter av Vetenskapligt Skrivande

Ethics in the Age of Information Technology

Introduction to Research Methodology in Computer Science

Presentation Technique

GIS/GeoInformatik

Lectures: 32 h

Recommended for

All PhD students in informatics, systems and computer science and other for GIS.

The course was last given:

Fall 2000.

Goals

To give a deeper understanding for the theoretical and practical aspects of GIS.

Organization

Lectures.

Contents

The students will read and present papers from the current litterature.

Topics include tool kits, model-based interface development, UI software architectures, user
interface development systems, and user interface development methodologies.

Literature

Laurini, Robert & Thompsson, Derek (1992). Fundamentals of spatial information systems. The APIC series, Academic Press ca 700 sidor.
Reference littterature: Chang S.K. & Jungert E. Projection for Image Information Retrieval and Spatial Reasoning, Academic Press London 1996.

Worboys, M.F. "GIS: A Computing Perspective".

Teachers

Teachers who will collaborate in the course are: Erland Jungert, Michael LeDuc, Tore

Risch, Per Svensson, Åke Sivertun.

Examiner

Åke Sivertun.

Schedule

Fall 2001.

Examination

Written paper.

Credit

5 credits.

GIS in Business and Service Planning

Lectures: 20 h

Recommended for

Students in Informatics, systems and computer sciences and subjects related to work with GIS in Business and service planning.

The course was last given:

Fall 2000.

Goals

To give an introduction to the use of Geographical data, tools and information systems in Business and service planning.

Organization

Lectures.

Contents

Introduction
Datacapture in GIS
Data mining
Spatial statistics
Information systems för descision support
Practical laborations
Report

Literature

Geographical Information Systems, Tor Bernhadsen.
GIS for Business and Service Planning, Longley and Clarke.

Teachers

Åke Sivertun.

Examiner

Åke Sivertun/Birger Rapp.

Schedule

Fall 2001.

Examination

Written report.

Credit

3 credits.

Comments

The course will be given in cooperation with EIS (The Laboratory for Economic Information Systems).

Home Informatics

Recommended for

Alla.

The course was last given:

Ny kurs.

Goals

Kursen bygger på växelverkan mellan teori och praktik och deltagarnas aktiva engagemang.

Den syftar till att:

1.- Ge insikt om och perspektiv på kunskapsbildningen inom smarta hemområdet, och dess tillämpningar. Det förutsätter välplanerad litteraturstudier, reflexioner, deltagande i seminarier och föreläsningar.

2.- Eget projektarbete avrapporteras i form av artikel. Det är en fördel om detta arbete kan utgå från och bearbeta erfarenheter av pågående forskningsprojekt. En avsikt är att den producerade artikeln skall komma att visa på sådan kvalitet att den kan publiceras.

Organization

Kursen består av ett antal gästföreläsningar från LIU, KTH, och Viktoria Institutet, studiebesök, diskussionseminarier samt tillfälle för diskusson av artikeln.

Inför varje diskussionseminarie skall deltagarna läst viss gemensam litteratur, gjort egna fördjup-ningar utifrån föreslagen litteraturlista samt sökt kompletterande litteratur och gjort vissa egna fördjupningsstudier. Avsikten är dels att göra en rejäl fördjupning i existerande litteratur om heminformatik, dels att ha en nära koppling till praktiken.

80 % av närvaro krävs för att få poäng

Litterature

Meddelas senare.

Teachers

Vivian Vimarlund, Sture Hägglund, inbjudna föreläsare.

Examiner

Vivian Vimarlund, Sture Hägglund.

Schedule

September 2001-februari 2002.

Kurstart fredagen den 21 september kl 09.00--12.00 och avslutas i början av februari 2002.

Credits

5 poäng.

Av dessa 5 poäng:

2 p för deltagande på seminarieserie + grupptentamen.

3 p för final paper.

Comments

Max 10 deltagare.

Information Extraction and Text Mining

Lectures: 24 h (seminars and lectures)

Recommended for

Graduate and doctoral students.

The course was last given: Never

The course runs: Fall 2001

Goals

To provide an overview of the field of Information Extraction, including concepts and methods that primarily has a Language Engineering perspective. The course will also cover fundamental issues in Text Mining and Document Summarisation.

Prerequisites

Graduate student, with some knowledge of linguistics.

Organization

Guded discussions based on reading of prepared material. Case studies and examples will be used to illustrate the practical application of the main concepts and methods.

Contents

IE can be seen as taking one step further compared to Information Retrieval (IR) in that not only the relevant documents should be found, but the process moves on to first single out passages, or extracts from documents, which contain the desired pieces of information, and second, turns them into structured information that is more readily digested and analyzed. IE requires a number of separate Language Engineering techniques that are used together;

i.e., POS-tagging, functional and sense disambiguation, pronoun resolution, etc.

Literature

Carbonell, J.G., J. Siekmann & Maria T. Pazienza (eds.). Information Extraction : Towards Scalable, Adaptable Systems, Springer Verlag, Lecture Notes in Artificial Intelligence, 1999.

+ selected journal and conference articles.

Teachers

Magnus Merkel

Examiner

Magnus Merkel

Schedule

Fall 2001

Examination

Active participation (presenting articles) and written paper.

Credit

4 credits

Semiotics: History, Basic concepts and Computer Applications

Lectures:

36 h.

Recommended for

Graduate students.

The course was last given:

Fall 1996.

Goals

The purpose of the course is to present the concepts of the general theory of signs and their historical development within different traditions of investigation. With a firm grasp of the theoretical concepts in hand, various concrete computer applications will be presented and discussed.

Prerequisites

None.

Organization

Twelve seminars about once every two week covering the history and basic concepts of semiotics followed by supervised individual study towards the end of the course in preparation for the presentation of term papers.

Contents

The course consists of two parts. The first part consists of a historical survey of the development of the key concepts of semiotic theory and a comparison of different traditions of research within semiotics. The concepts of sign, icon, index and symbol constitute the focus for the historical, theoretical, and comparative part of the course. the syntactic, semantic, and pragmatic dimensions of semiotic systems are also defined, explained, and exemplified. The second part of the course consists of independent supervised investigations by the participants into different aspects of the theoretical concepts and their relevance for applications in computer science.

Literature

Andersen, P.Bl (1991) A Theory of Computer Semiotics: Semiotic approaches to construction and assessment of computer systems. Cambride: Cambridge University Press

Eco, Umberto (1984) Semiotics and the Philosophy of Language. Bloomington: Indiana University Press.

Robert E. Innis (ed.)(1985) Semiotics: An Introductory Anthology. Bloomington: Indiana University Press.

Thomas A. Seboek (1994) An Introduction to Semiotics. London: Pinter Publ.

Teachers

Richard Hirsch

Examiner

Richard Hirsch

Schedule

Fall 2001.

Examination

A written paper on a chosen theoretical topic or a report on an investigation of computer applications of semiotic theory.

Credit

Up to 5 credits.

Avhandlingsseminarier

Lectures:

20 h

Recommended for

Kursen vänder sig till forskarstuderande som arbetar med sin lic- eller doktorsavhandling. För att få delta på kursen behöver kursdeltagare inte ha färdiga avhandlingskapitel, men ett synopsis eller utkast till sin avhandling skall finnas.

The course was last given:

VT 2001

Goals

Huvudsyftet med kursen är att deltagarna får delar av sina pågående avhandlingsarbeten (lic- eller doktorsavhandling) granskade av en utsedd opponent samt av övriga deltagare. Ett annat viktigt syfte är att deltagarna får träning i att opponera på andra arbeten.

Prerequisites

Inga.

Organization

Kursen genomförs i seminarieform med presentation, opposition och diskussion.

Contents

Seminariebehandling av utkast till avhandlingsbidrag. Presentation och opposition. Varje bidrag behandlas i ungefär 45 minuter. Kursdeltagare förväntas aktivt delta i diskussioner kring struktur och innehåll i avhandlingar.

Literature

Presenteras senare.

Teachers

Göran Goldkuhl, Stefan Cronholm.

Examiner

Göran Goldkuhl.

Schedule

Höstterminen 2001.

Examination

Avhandlingsseminarierna hålls i kursform och ger doktorandpoäng beroende på aktivitetsgrad. Opponentroll: Skriftliga oppositioner 1-2 sidor. Respondentroll: Efter seminariet skriver respondenten ett lärpapper, som sammanfattar de viktigaste kommentarerna från seminariet.

Credit

3 credits.

Business Modelling i teori och praktik

Recommended for

Doktorander och forskarstuderande vid

- Ekonomiska informationssystem (EIS)

- Informationssystemutveckling (VTIS/ISU)

- IMIE forskarskola

- MIT forskarskola

The course was last given: Fall 1997

Goals

Öka förståelsen för modellanvändning vid förändringsarbete inom företag och organisationer med speciell fokus på sambandet mellan

- affärsutveckling

- verksamhetsutveckling

- systemutveckling

Prerequisites

Grundkunskaper i företagsekonomi eller systemutveckling.

Organization

Kursen består av koncentrerade föreläsningar, litteraturbevakningar, teoretiskt modelle-

ringsarbete och praktikfallsanalyser.

Contents

Följande teman kommer bl. a. att beröras:

- Modellers och metoders roll vid förändringsarbete

- Olika perspektiv och aspekter vid modelleringsarbete

- Teorier från företagsekonomi och informationssystem för modellering

- Metodkombinationer (t.ex. metodkedjor och metodallianser)

- Kvalitetssäkring av modeller och metoder

- Modelleringsarbete inom mindre och större företag

- Praktikfall inom Business Modelling

Literature

Nilsson, A.G. & Tolis, C. & Nellborm, C. (Eds.) (1999). Perspectives on Business Modelling - Understanding and Changing Organisations, Springer Verlag, Berlin - Heidelberg.

Examiner

Anders G. Nilsson, Birger Rapp.

Schedule

Fall 2001

Examination

Skriftliga rapporter och uppsatser. Seminarier.

Credit

5 credits

Ekonomisk brottslighet

Lectures:

36 h

Recommended for

Doktorander med intresse för bekämpning av ekonomisk brottslighet, tex med inriktning mot revision, affärsrätt, affärsetik, kriminologi och datasäkerhet. Praktiker (åklagare, ekopoliser, skatteutredare, advokater, revisorer) med intresse av breddning och fördjupning.

The course was last given:

VT-HT 1999

Goals

Att ge en allmän översikt av ekobrottslighetens omfattning och vanligaste former, liksom av de myndigheter som bekämpar denna brottslighet. Att ge en översiktlig kunskap rörande ekonomiska modeller för fördelning av resurser för brottsbekämpning. Att ge en inblick i ekobrottslighet via IT och Internet.

Prerequisites

40 poäng företagsekonomi, nationalekonomi, matematik, statistik eller motsvarande.

Organization

Kursen ges vid IDA under sex heldagar, varvid de två sista dagarna huvudsakligen ägnas åt redovisning av uppsatser.

Contents

Ekobrottslighetens definition och omfattning. Mätning av brottslighet. Direkt och preventiv effekt av brottsbekämpning.

Vanliga brottsformer. Utvecklingstendenser. Ekonomiska modeller, kontrollstrategi. Beskrivning av myndigheternas arbete (polis, åklagare, domstol, skattemyndighet, tull, Ekobrottsmyndigheten). Forskning om ekobrott i Sverige och utomlands.

Literature

Statliga utredningar, bl a Branschsaneringsutredningen och Internationella ekobrott. Rapporter från Brottsförebyggande Rådet, Ekobrottsmyndigheten, Riksskatteverket och Riksrevisionsverket. Internationella tidskriftsartiklar om skattekontroll. Antologier om ekobrott och konkursbrott.

Teachers

Leif Appelgren, gästföreläsare från myndigheter och universitetet.

Examiner

Leif Appelgren.

Schedule

Höstterminen 2001.

Examination

Godkänd uppsats om ca 10 sidor, godkänd räkneuppgift avseende ekonomiska modeller, godkänd redovisning av litteraturavsnitt, närvaro.

Credit

5 poäng

Comments

Externa, d v s ej inskrivna doktorander, v.g. kontakta examinator före intresseanmälan..

Informationssamhällets infrastruktur

Lectures:

36 h

Recommended for

Denna kurs vänder sig till doktorander och andra personer som är intresserade av en systematisk syn på informationssamhällets kännetecken.

The course was last given:

VT 2000.

Goals

Utvecklingen av informationssamhället har vid sekelskiftet nått en sådan mognad och stabilitet att det är meningsfullt att söka diskutera några av de övergripande mönster som kan vara giltiga för kontakter inom detta samhälles ekonomiska, sociala och kulturella verksamheter. Hur ser de mönster ut som är kännetecknande för olika kommunicerande verksamheter inom detta samhälle? Finns ramar för verksamheter, finns strukturella regler som är tydliga? Bland kännetecken finns t ex ökad snabbhet i många sammanhang. Finns villkor för denna snabbhet?

I denna kurs diskuteras och analyseras strukturella kännetecken som på makronivå gäller för detta kunskaps- och nätverkssamhälle. De tekniska system som numera kommer i bruk berör ett stort antal kontaktformer, med konsekvenser för ekonomi, kommunikation, rätt, kultur m m. Med en ökad tillgänglighet för kunskap om dessa former kan sannolikt ett stabilare och mer uthålligt samhälle byggas. Kan övergripande kännetecken definieras för kontakter inom detta samhälle?

Avsikten med kursen är inte att allmänt diskutera en utveckling som

pågår, utan att söka definiera egenskaper för viktiga funktioner inom informationssamhället, samt en yttre rand för dessa. Med hjälp av detta eftersträvas en vidgad skärpa för analys och kritik av den pågående samhällsförändringen.

Prerequisites

Inga särskilda krav ställs för deltagande i kursen.

Contents

Bland områden som identifierats som intressanta för denna kurs, befinner sig:

- Olika sätt att beskriva informationssamhällets historiska utveckling
- En systematisk syn på tekniska nätförutsättningar
- Nya rättsliga förutsättningar
- Ekonomiska förutsättningar och nya former
- Vidgade kulturella förutsättningar
- Politiska förutsättningar

Finns gemensamma strukturer, finns i någon mening generella egenskaper som kännetecknar den aktuella utvecklingen inom olika områden som de ovan nämnda? Man kan t ex, funktionellt sett, utgå från de ökade möjligheterna att distribuera, de allt färre gränserna och (som nämnts) den ökade snabbheten m m. Vilka effekter får användning av egenskaper som dessa? Blir det kommande samhället mer uthålligt, blir det mer öppet och lättillgängligt? Inleds en sådan utveckling av sig själv, eller krävs åtgärder?

Literature

Preliminär lista av skrifter, av vilka en del endast kommer att studeras till utvalda delar.

Barber, B A place for commerce or a place for us? Princeton, 1999

Becker, T& Slaton, C The future of teledemocracy, Univ of Auburn, Spring, 2000

Carlén, T Nätjuridik, Lag och rätt på Internet, Norstedts 98

Castells, M Information Age, The rise of the Network Society, part I-III, 1996-98

Dutton, B Society on the line, Oxford Univ Press, 1999

Edmar, M Juridiska villkor på nätet (titel ej komplett), 1999

Gates, B The road ahead, Viking, UK, 1997

Hiltz, SR & Turoff, M The Network Nation, Human communications via computers, 1978

INRIA/EU Measuring information society, Bryssel, 1999

IT Kommissionen Informationsteknologin, Vingar åt människans förmåga, SOU 1994:118

Jerkert, B Att rösta med händerna, Demokratiutredningen, SOU 1998:85

Keskinen, A Towards user empowerment, Univ of Tampere, 1999

Montin, S Lokala demokratiexperiment, Demokratiutredningen SOU 1998:155

Ohlin, T Samhällsdialogen, KFB, 1998

Olsson, A R Elektronisk demokrati, Demokratiutredningen, SOU 1999:12

Toffler, A The third wave, 1979

Tsagarousiano, R et al Cyberdemocracy, Cities and civic networks, 1998

Härförutom kommer utdrag ur ett antal offentliga betänkanden att åberopas.

Teachers

Tomas Ohlin.

Förutom den kursansvarige beräknas följande personer kunna medverka: Fil dr Auli Keskinen (Helsingfors) Det uthålliga informationssamhället Jur kand Per Furberg (Göteborg) De nya rättsliga förutsättningarna Historikern Lars Ilshammar (Örebro) Olika historiska perspektiv

Fil dr Frans Lettenström (Academic Press,Barcelona) Ekonomiska villkor för kunskapstjänster på nätet Kanslichef (Kulturnät Sverige) Cissi Billgren Nya kulturella villkor Journalistikforskaren Anders R Olsson Elektronisk demokrati.

Examiner

Tomas Ohlin.

Schedule

Höstterminen 2001.

Examination

Varje elev ska författa en rapport inom ett av ovanstående områden, samt opponera på en annan.

En avsikt är att de inlämnade rapporterna tillsammans ska komma att visa på sådan kvalitet att sammanställningen kan publiceras.

Credit

5 poäng.
Frånvaro medges med högst 6 timmar (en dag) per deltagare för att få poäng.

Inter-organisatorisk samverkan och elektroniska affärer

Lectures:

24 h.

Recommended for

Kursen ges av ämnesområdet informationssystemutveckling. Den vänder sig till personer med intresse för teorier kring inter-organisatorisk samverkan och elektroniska affärer samt praktiska exempel på detta.

The course was last given:

Ny kurs.

Goals

Kursen skall ge kunskap om inter-organisatorisk samverkan och elektroniska affärer. Kursen fokuserar både affärer mellan företag (b2b) och affärer med konsumenter (b2c). Kursen skall ge kunskap om olika modeller, tillvägagångssätt och metoder för interaktion och utveckling av samverkan i nätverk. Ett mål med kursen är att visa hur informationsteknik kan innebära både möjligheter och begränsningar för denna typ av samverkan. Kursen kommer att ge såväl teoretiska som praktiska bilder av området.

Prerequisites

Inga särskilda förkunskapskrav.

Organization

Kursen består av ett antal föreläsningar samt diskussions- och examinationsseminarier. Delar av doktorandkursen kan samläsas med D-studenter (gäller främst föreläsningar).

Contents

Affärslogik vid elektroniska affärer
Modeller för interaktion i nätverk
Grundläggande begrepp inom området
Metoder och tillvägagångssätt vid utveckling av inter-organisatorisk samverkan
Informationsteknikens möjligheter och begränsningar
Koordination i och av relationer
Bilder från praktiken - exempel på inter-organisatorisk affärssamverkan

Literature

Huvudlitteratur:
Timmers (1999), Electronic Commerce, John Wiley & Sons
Artiklar
Bredvidläsning:
Keen (2000), Electronic-Commerce Relationships, Prentice-Hall
Turban (1999), Electronic Commerce: A Managerial Perspective, Prentice-Hall

Teachers

Karin Axelsson, Ulf Melin (samverkan med grundutbildningen), ev gästföreläsare.

Examiner

Karin Axelsson.

Schedule

Höstterminen 2001.

Examination

Inlämningsuppgift som examineras på seminarium.

Credit

3 poäng.

Kvalitativ analys och teoriutveckling

Lectures: 24 hours

Recommended for

Doktorander med intresse för kvalitativa undersöknings- och analysmetoder.

The course last ran: Spring 1999

The course runs: Fall 2001

Goals

Öka kunskap om kvalitativ analys av empiriska data och hur empirigrundade kategorier och teorier kan genereras. Öka kunskap om teoribegreppet, teoretisering samt beskrivning och grundning av teorier och andra närliggande kunskapsformer.

Prerequisites

Grundläggande kunskaper i kunskapsteori och forskningsmetodik. Som förberedelse till kursen rekommenderas inläsning av:

Repstad: Närhet och distans, Studentlitteratur

Starrin m fl: Från upptäckt till presentation, Studentlitteratur

Den senare boken är en introduktionsbok på svenska till kvalitativ analys enligt Grounded Theory

Organization

Koncentrerade föreläsningar. Eget arbete med tillämpningsuppgift. Seminarier.

Contents

Kvalitativt förhållningssätt vid urval, insamling och analys av empiriska data

Grounded Theory som metodologiskt angreppssätt för kvalitativ analys av olika typer av empiriska data

Arbetssätt vid Grounded Theory; olika kodningsprinciper som öppen kodning, axial kodning, selektiv kodning; generering av kategorier och teorier.

Kunskapsgrundning

Välgrundad teoriutveckling

Välgrundad metodutveckling

Grundningsprocesser

Argumentativ rationalitet

Kvalitativ analys i relation till metodforskning

Teoribegreppet

Konstruktion av teorier

Kunskapsmodellering (av kategorier och teorier)

Literature

A Strauss, J Corbin: Basics of qualitative research. Grounded Theory procedures techniques, Sage, Newbury Park

G Goldkuhl: Välgrundad metodutveckling, IDA, LiU

samt litteratur med exempel på Grounded Theory-tillämpningar inom informationssystem-området.

Bredvidläsningslitteratur

PD Reynolds: A primer in theory construction, Bobbs-Merril, New York

Teachers

Professor Göran Goldkuhl, tel 070-552 98 15, e-mail ggo@ida.liu.se

Fil dr Stefan Cronholm, tel 013-28 16 38, e-mail stecr@ida.liu.se

Examiner

Professor Göran Goldkuhl

Schedule

Koncentrerade föreläsningar. Eget arbete med tillämpningsuppgift. Seminarier.

Föreläsningar kommer att behandla följande delar:

Grunder i kvalitativ forskningsmetodik

Kvalitativ analys (kategori- och teorigenerering) enligt Grounded Theory;

begrepp, arbetssätt

Teoribegreppet, teorikonstruktion

kunskapsmodellering (begreppsmodellering, teorimodellering)

kunskapsgrundning (välgrundad teoriutveckling, välgrundad metodutveckling)

Exempel på kvalitativ analys och teorigenerering

Examination

Inlämningsuppgift med kvalitativ analys av empiriska data. Redovisning på seminarium.

Credit

3 credits

Teoridriven, induktiv och modelleringbaserad forskning (TIM)

Lectures:

ca 30 h

Recommended for

Forskarstuderande inom informatik och informationssystemutveckling, samt andra med intresse för empirisk forskning och teoriutveckling. Kursen är seminariebaserad och är även öppen för disputerade som önskar fördjupa sina kunskaper.

The course was last given:

VT 2000.

Goals

Kursen skall ge ökade kunskaper och färdigheter avseende datainsamling, dataanalys och teoriformule-ring vid forskningsarbete samt ökad förståelse för hur man kan kombinera teoridrivet och induktivt-empiribaserat och modelleringsbaserat angreppssätt. Kursen avser att vara ett konkret stöd för kursdeltagare att analysera empiriska fall och utveckla teori förutom att bidra till ökade färdigheter i dessa avseenden. Kursen har ett uttryckligt bimål att öka förmågan att kritiskt granska samt skriftligen kommentera och muntligen kommunicera kring vetenskapliga arbeten.

Prerequisites

Inga speciella förkunskaper behövs. Samtidigt bör påpekas att kunskaper inom vetenskapsteori och forsknings-metodik (t.ex motsvarande kurserna Vetenskapsteori, Kunskapsprojektering samt Kvalitativ analys och teoriutveckling) befrämjar förståelse av

kursens innehåll. Kursen bygger också på (vad avser fallseminariedelen) att kursdeltagarna har egna fall att redovisa, dvs empiriska resultat från pågående eller genomförd forskning.

Kursen kan samläsas med kursen "Avhandlingsseminarier". Kursen kompletterar "Avhandlingssemina-rier" genom att fokusera analysprocessen före skrivande av avhandlingskapitel.

Organization

Kursen bedrivs seminariebaserat. Kursen består av två typer av seminarier:

Fallseminarier och litteraturseminarier

Fallseminarier innebär att kursdeltagare redovisar pågående forskning. Redovisning och analys görs av stegen från empiriska data till beskrivningar av data och vidare till abstraherade kategorier och formulerade teorier. Särskilt fokus riktas mot användning av teorier och modelleringstekniker för insamling och analys av data och för teoriutveckling. Fallseminarier utnyttjar kursdeltagares fall och avser att bidra till utveckling av aktuell fallanalys samt därmed utgöra en illustration av lämpliga tillvägagångssätt. De kursdeltagare som deltagit med fall på ett seminarium dokumenterar lärdomar från fallseminariet ("lärpapper").

Litteraturseminarier innebär granskning av litteratur med relevans för kursens syften. Litteratur kan avse vetenskapsteoretiska, forskningsmetodologiska, ämnesteoretiska eller modellerings-inriktade frågor. Till varje seminarium granskas ett utvalt och fastställt litteraturstoff (artiklar och/eller bokkapitel). Kursdeltagare granskar litteraturen och skriver en granskningsrapport till aktuellt seminarium. Granskningsrapporten skall innehålla 1) rekonstruktion och analys av de viktigaste teserna/principerna och använda begreppen, 2) en kritisk värdering samt 3) en relatering till kursens tema samt egen forskning. Gransk-nings-rapporterna distribueras till kursdeltagarna före seminariet så att läsning av dessa granskning-rapporter kan ske innan seminariet. På seminarierna diskuteras aktuell litteratur och de framställda granskning-rapporterna. Jämförelse sker mellan de olika granskningsrapporterna.

Varje kurstillfälle (normalt 4 timmar) kommer att bestå av både fallseminarier och litteratur-seminarier.

Contents

Kursen behandlar empiriska och teoriutvecklande faser av

forskningsarbete och samspel mellan dessa. Särskilt fokus riktas mot möjligheter att kombinera ett teoridrivet och ett induktivt-empiriskt och ett modelleringsbaserat angreppssätt (TIM) vid dataanalys och teoriformulering. Vad gäller datainsamling görs en primär avgränsning till kvalitativa fallstudier, men andra tillvägagångssätt är möjliga att tillämpa inom en TIM-ansats. Kursen avser att fokusera, problematisera och vidareutveckla den kombinerade forskningsansats (TIM) som har kommit att utvecklas inom forskarstudieämnet Informationssystemutveckling och forskningsgruppen VITS. Kursen är starkt tillämpningsorienterad till sin karaktär och har forskningsutvecklande syften; såväl på individnivå som för ämnesområdet.

Enligt TIM-strategin så skall sålunda forskningsprocessen bedrivas med aktivt stöd från generativa teorier med relevans för forskningsdomänen, ett rikt empiriskt datamaterial som skall behandlas med ett öppet och nyfiket sinne, strukturerade och åskådliggörande modeller (bilder och texter) som konceptualiserar och abstraherar data med stöd av explicita notationer.

Kursen behandlar mer specifikt följande moment:

TIM som en särskild form av abduktiv forskning
Teoribegreppet
Användning av teorier vid datainsamling, dataanalys och teoriutveckling
Exempel på teorier som brukas som aktivt teoristöd (handlingsteori, affärsaktsteori, praktikteori, talaktsteori)
Diagnostiska kvalitativa fallstudier
Kvalitetssäkring av empiriska data
Triangulering
Kvalitativ analys (Grounded Theory och andra ansatser)
Behov av kunskapsmodellering
Modelleringstekniker för beskrivning av empiriska data, kategorier och teorier (t.ex begrepp grafer, teorigrafer, handlingsgrafer, målgrafer)
Transparens i analys och redovisning av empirisk och teoriutvecklande forskning
Literature
Artikar och bokkapitel kommer att väljas utifrån kursens syften och de behov som uppstår under kursen.

Teachers

Göran Goldkuhl

Examiner

Göran Goldkuhl

Schedule

Höstterminen 2001.

Examination

Deltagande på fallseminarier och litteraturseminarier. Presentation av egna fall. Dokumentering av lärdomar efter fallseminarier ("lärpapper"). Granskningsrapporter till litteraturseminarier.

Credit

3-5 credits, (efter insats).

Comments

Kursen är ett samarbetsprojekt mellan ämnesområdet informatik vid Internationella Handelshögskolan (IIH) i Jönköping och ämnesområdet informationssystemutveckling vid Institutionen för datavetenskap, Linköpings universitet. Kursen genomförs på IHH i Jönköping.

Utrednings- och undersökningsmetodik

Lectures:

35 h

Recommended for

Alla doktorander.

The course was last given:

Fall 1999

Goals

- väl insatt i modern utredningsmetodik
- väl orienterad om kvantitativa metoder
- känna till centrala begrepp och teorier inom vetenskapsteori

Prerequisites

Inga.

Organization

Föreläsningar, seminarier, inlämningsuppgifter, tentamina.

Contents

Vetenskapsteori, kvalitativ undersökningsmetodik, modelltänkande och systemanalys, statistiska metoder, simulering, prognoser, utvärdering och presentationsteknik.

Literature

Beslutas senare.

Teachers

Birger Rapp.

Examiner

Birger Rapp.

Schedule

Höstterminen 2001.

Examination

Aktivt deltagande på seminarierna, godkända inlämningsuppgifter och laborationer samt skriftliga och muntliga tentamina.

Credit

5 credits.

Constraint Programming

Lectures:

24 h

Recommended for

Graduate students.

The course was last given:

Spring 1999.

Goals

The main goal of this course is to give an introduction to a new programming paradigm based on constraints over different domains, such as real (rational) numbers or finite domains. Special emphasis will be put on the practical use of these methods, in particular for solving combinatorial optimization problems.

Prerequisites

Basic course in programming. Knowledge of Prolog is an advantage but a short introduction to Prolog can be organized if needed.

Organization

Lectures given by the teachers and seminars prepared by the participants. Programming assignments on the selected topics.

Contents

- Introduction to constraint programming.
- Basic algorithms used in constraint programming systems (constraint satisfaction and simplification, optimization).
- Finite domain constraints.
- Constraint Logic Programming scheme.
- Simple modeling techniques.

- Modeling with finite domain constraints.
- Searching methods.
- Selected advanced issues.

Literature

Kim Mariott and Peter J. Stuckey "Programming with Constraints: An Introduction", The MIT Press, 1998. Selected papers and manuals.

Teachers

Ulf Nilsson, Jan Maluszynski

Examiner

Ulf Nilsson/Jan Maluszynski

Schedule

Fall 2001.

Examination

Programming assignments.

Credit

4-6 credits.

Design Patterns

Lectures:

12 h

Recommended for

Graduate students, undergraduates in third and fourth year.

The course was last given:

New course.

Goals

Knowledge in advanced object-oriented design; analysis, process, and organizational patterns.

Prerequisites

Knowledge of an object-oriented language.

Organization

SAS, PELAB.

Contents

The course introduces the concept of a pattern in design, analysis, and processes. Patterns are standard solutions for standard problems, standard models for standard systems, or standard algorithms for standard processes. Patterns have been introduced into computer science by Gabriel, Coplien, Gamma, Johnson and others, after Alexander discovered them for buildings. Patterns can be applied interdisciplinary in the sense of a universal design theory.

Patterns serve for better communication among engineers, better documentation, better architecture descriptions, and many other

purposes.

Every software engineer should have a basic knowledge of patterns.

Literature

Gamma, Helm, et.al. Design Patterns. Addison-Wesley.

Buschmann, et.al. Pattern-oriented software architecture. Addison-Wesley.

Other books.

Teachers

Uwe Assmann

Examiner

Uwe Assmann

Schedule

Fall 2001.

Examination

Oral.

Credit

3 credits

Comments

This course should be taken by every software engineer. Patterns are one of the most important discoverings in computer science in the last 20 years.

Distributed algorithms for fault-tolerance

Lectures:

20h

Recommended for

PhD students with a basic background in computer algorithms, logic and discrete mathematics.

The course was last given:

New course

Goals

The course will give an overview of distributed systems and problems appearing in distributed computations in presence of faults.

Prerequisites

Undergraduate course in distributed systems recommended.

Organization

Lectures, self study sessions, and invited seminars.

Contents

The course begins with models and notions for distributed systems and goes on to study well known algorithms for fault-tolerant broadcast, consensus and related problems, as well as replication management including group services. Other related topics such as self-stablising systems are also reviewed.

Literature

Articles, selected chapters from books by Muellender, Tel and Lynch, to be decided.

Teachers

Simin Nadjm-Tehrani, Ulf Nilsson

Examiner

Simin Nadjm-Tehrani

Schedule

Fall 2001.

Examination

Written examination, or home assignments - to be decided.

Credit

4 points.

Introduction to bioinformatics

Lectures: approx 30 h

Recommended for

All graduate students and undergraduate students with a CS background.

The course was last given: new course

The course runs: Fall 2001

Goals

The aim of the course is (1) to introduce and survey basic notions in primarily molecular biology, and (2) to study selected problems with a computer science, or mathematics, perspective.

Prerequisites

The course is intended to be an introductory course in bioinformatics assuming no prior knowledge in "bio" but some familiarity with "informatics".

Organization

Approx 15 lectures (90 min) plus project.

Contents

Basic concepts and terminology: Cells, DNA, RNA, genes, genome, chromosomes, amino acids, proteins.

Processes: Cell division, genetic codes and the building of proteins, mutations, error correction, metabolic and regulatory processes.

Selected notions in bioinformatics: Sequence analysis and alignment. Modeling and prediction of protein structure. Biological databases and data mining i biological data. Classification of genes.

Physiological modeling. Modeling and simulation of biological processes. (Possibly also visualization, and non-linear modeling.)

Literature

To be decided.

Teachers

Invited teachers from several LiU departments, and possibly external guests.

Examiner

Ulf Nilsson

Schedule

To be announced.

Examination

Home assignments and project.

Credit

6 credits (preliminary)

Comments

Aspects of scientific writing

Lectures:

10 hours

Recommended for

All doctoral students at IDA / HMI.

The course was last given:

Fall 00.

Goals

To provide the basic skills needed for reading, writing and presenting scientific work (journal papers, monographs, presentations). This includes guidelines for structuring written and oral presentations, as well as for critical reading.Prerequisites

Prerequisites

Good working knowledge of English.

Organization and Contents

The seminars will take the form of guided discussions of a number of selected scientific papers, and use these to illustrate essential points relating to reading, writing and presentation. Course participants are encouraged to suggest examples of papers that they consider particularly good or bad. The papers need not be within their own area of interest or expertise.

Literature

Swales & Feak (1994). Academic writing for graduate students. The University of Michigan Press.

Teachers

Erik Hollnagel

Examiner

Erik Hollnagel

Schedule

Fall 2001.

Examination

Presence during seminars + summary report or presentation

Credit

3 credits

Ethics in the Age of Information Technology

Lectures:

16 h

Recommended for

Graduate students

The course was last given:

Fall 2001.

The course runs:

Fall 2001.

Goals

To introduce ethical theories and methods. To present and analyse ethical issues related to computerisation and information technology. To present and analyse problems in research ethics.

Prerequisites

None.

Organization

Presentations, seminars and discussions.

Contents

Ethical theories and methods for analysing ethical arguments. The course focuses on ethical issues related to the use of information technology, like privacy, responsibility and decision support and ethical issues related to the use of Internet. Another focus is on

research ethics. This includes cheating, rights and responsibilities of researchers, ethical issues related to publication and the confrontation of different systems of norms in applied research.

Literature

Beach, Doré, The Responsible Conduct of Research, Weinham: VCH, 1996.
Collste, Göran, ed, Ethics in the Age of Information Technology, Studies in Applied Ethics, 7, Linköping, 2000 (Can be bought at the start of the course).
Johnson, Deborah, Computer Ethics, 3rd ed., Upper Saddle River: Prentice Hall, 2001.

Teachers

Göran Collste and Jan Holmquist, Centre for Applied Ethics.
Erik Sandewall, IDA.

Examiner

Göran Collste.

Schedule

Start September 13, ends October 25.

Examination

Seminar activity and written papers.

Credit

5 credits.

Introduction to Research Methodology in Computer Science

Lectures:

16 h

Recommended for

New graduate students. Special study groups will be arranged for students with common interests, such as students in the Industry Research School, HMI Research School, etc.

The course was last given:

Fall 2000.

Goals

To prepare for graduate studies in general and for formulating research problems and thesis topics in particular.

Prerequisites

None.

Organization

Lectures and seminars. Optional study groups for extra course credit.

Contents

Computing as a discipline. Introduction to the philosophy of science. Scientific writing, publication and information retrieval. Science and technology, methodological issues. The PhD study

process. Aspects of ethics and quality control in scientific work. Research funding and politics.

Literature

Chalmers: What is this thing called science.

Journal papers.

Teachers

Sture Hägglund and invited guests.

Examiner

Sture Hägglund.

Schedule

September-November 2001.

Examination

Written examination and seminar activity. Study group report for 2 extra credit points.

Credit

3 + 2 credits

Presentation Technique

Lectures:

Ca 30 h

Recommended for

Graduate students.

The course was last given:

Spring 2000.

Goals

To achieve better presentations of your own research at international conferences and local meetings. To feel confident in front of an audience. To practise introduction of speakers and dealing with questions.

Prerequisites

None.

Organization

Day 1-2: Voice- and body language, mind-mapping, how to take notes, the students present prepared presentations. One month later - Day 3-4: Body language, overheads, short performances, students presentations (10 min). One month later - Day 5-6: The language, students own unprepared presentations.

Contents

Different presentation techniques. Mind-mapping, flash-cards and other preparations. Body language, visual aids and vocabulary expansion.

Literature

Powerful presentations/ Jöns Ehrenborg-John Mattock.

Teachers

Ingela Dellby.

Examiner

Ingela Dellby.

Schedule

Fall 2001

Examination

Presentations and active participation in workshops, discussions and continuous evaluation of performances.

Credit

3 credits

Comments

Maximum 10 participants.

Database and Information Techniques

Olof Johansson, Ph. D., Linköping 1996. Assistant professor *(forskarassistent)*, engineering information systems.

Engineering databases, complex product models.

Patrick Lambrix, Ph.D., Linköping 1996. Assistant professor (*universitetslektor*).

Intelligent Information Systems: knowledge representation, organization and management of information, common-sense reasoning, knowledge-based information retrieval, information extraction.

Nahid Shahmehri, Ph. D., Linköping 1991. Professor of computer science. Group leader, IISLAB and EDSLAB. Head of the Division for Database and Information Techniques. Previous affiliation: Carlstedt Elektronik AB, Göteborg.
Information management, information retrieval and filtering, information extraction, information security, workflow management, CSCW.

Artificial Intelligence and Integrated Computer Systems

Patrick Doherty, Ph. D., Linköping 1991. Professor of computer science. Group leader, KPLAB. Head of the Division for Artificial Intelligence and Integrated Computer Systems.

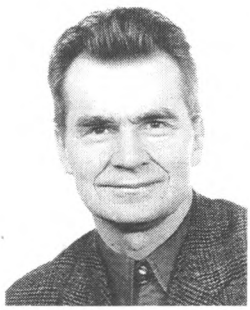
Artificial Intelligence, Knowledge Representation, Autonomous Systems, Deliberative/Reactive Systems, Reasoning about Action and Change, Planning, Nonmonotonic Reasoning.

Dimiter Driankov, Ph. D., Linköping 1989. Associate professor (*docent, universitetslektor*), logic and AI.

Reasoning under uncertainty, many-valued logics, approximate reasoning, fuzzy control & systems, autonomous agents.

Anders Haraldsson, Ph. D., Linköping 1977. Associate professor *(bitr professor)*, computer science. Head of the department of computer science, 1990-1999. Director of undergraduate studies for the Computer Science and Technology programmes at Linköping Institute of Technology. Previous affiliation: Uppsala.

Programming languages and systems, programming methodology, program manipulation, partial evaluation.



Erik Sandewall, Ph. D., Uppsala 1969. Professor of computer science. Prorector of Linköping University. Several previous affiliations.

Representation of knowledge with logic, reasoning about action and change, cognitive robotics, autonomous agents.

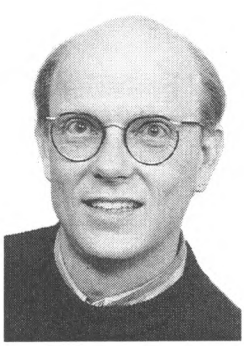
Human-Centered Systems

Lars Ahrenberg, Ph. D., Uppsala 1987. Professor of computational linguistics. Group leader, NLPLAB. Head of the Divison for Human-Centered Systems.

Syntax, semantics and pragmatics of natural language; dialogue systems, natural language; machine-aided translation, parallel corpora.

David Carr, Ph.D., Maryland 1995. Assistant professor (*universitetslektor*), human-computer interaction. Previous affiliations Maryland and Luleå.

User interface design, visualization, computer-supported cooperative work and groupware for teamwork.



Nils Dahlbäck, Ph. D., Linköping 1992. Assistant professor (*universitetslektor*), cognitive science.

Natural language processing, especially empirically based computational models of discourse. Cognitive aspects of discourse coherence in man and machine. Intelligent user interfaces. Individual differences in cognitive abilities and their relationship to hypermedia navigation.

Henrik Eriksson, Ph. D., Linköping 1991. Associate professor (*docent, universitetslektor*), computer science. Previous affiliations: Stanford University, Stanford, CA, 1991-94 and the Swedish Institute of Computer Science (SICS) 1996-97.
Knowledge-based systems, knowledge acquisition, medical informatics, software development environments, software reuse, command-and-control systems, Internet-based applications, Java programming.

Niklas Hallberg, Ph.D., Linköping 1999. Assistant professor *(vik. forskarassistent),* informatics.

System development, requirements engineering, organizational development, quality methods, participatory design, internet and intranet technology.

Erik Hollnagel, Ph.D., Århus 1981. Professor of Human-Computer Interaction. Several previous affiliations in Denmark, England and Norway.

Cognitive systems engineering, risk and reliability analysis, user modelling and simulations, decision support and expert systems.

Sture Hägglund, Ph. D., Linköping 1980. Professor of knowledge-based systems. Deputy head of the department of computer science. Manager Industry Research School. Group leader, ASLAB. Previous affiliation: Uppsala.

Expert systems and artificial intelligence applications, database technology, human-computer interaction, intelligent tutoring systems and software engineering.

Erland Jungert, Ph.D., Linköping 1980, consulting professor (*docent)* geographical information systems and computer science. Main affiliation: Swedish Defense Research Establishment (FOA).

Qualitative spatsial reasoning, geographical information systems, database technology, visual languages.

Arne Jönsson, Ph. D., Linköping 1993. Associate professor (*docent*, *universitetslektor*), computer science. Director of undergraduate studies for the Cognitive Science program. Previous affiliation: Monash University, Clayton, Australia, 1994-95.
Artificial intelligence, natural language processing, dialogue systems, especially empirically based computational dialogue models.

Rita Kovordányi, Ph. D., Linköping 1999. Assistant professor (*forskarassistent*), computer science. Previous affiliation: Lund University.

Cooperative systems, adaptive support for visual reasoning, cognitive modeling and simulation, constraint satisfaction in interactive activation networks, knowledge representation.

Bertil Lyberg, Ph.D., Stockholm 1981. Consulting professor (*adjungerad professor*), speech technology. Manager of spoken language processing, Telia Research AB. Research Affiliate, Research Laboratory of Electronics, M.I.T. 1982-83.

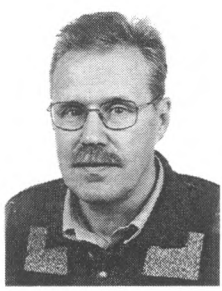
Text-to-speech conversion, speech recognition, speech-to-speech translation, prosody in speech synthesis and recognition

Hans Marmolin, Ph.D., Uppsala 1973. Consulting professor *(adjungerad professor)*, human-computer interaction, especially information psychology. Previous affiliation KTH and others.

Human-computer interaction, usability engineering, cognitive ergonomics, user interface design.

Magnus Merkel, Ph.D., Linköping 1999. Assistant professor (*vik. universitetslektor*), computational linguistics.

Natural language processing, computational support for writing and translation; machine-aided translation, parallel corpora, information extraction.



Kjell Ohlsson, Ph.D., Umeå 1982. Professor at the Department of Mechanical Engineering. Part time at the Department of Computer and Information Science, human-computer interaction. Previous affiliations Umeå, Luleå and others.

Human-computer interaction, usability engineering, cognitive ergonomics, decision making, psycho acustics.

Eva Ragnemalm, Ph.D., Linköping 1999. Assistant professor (*vik. universitetslektor*), computer science.

Intelligent tutoring systems and cognitive science.

Åke Sivertun, Ph. D., Umeå 1993. Assistant professor (*universitetslektor*), geoinformatics. Group leader, LIBLAB. Assistant professor (universitetslektor) at Högskolan i Kalmar.

Geographical Information Systems - GIS. Communication of complex data and linking multi disciplinary models in GIS. Research in environmental programs, programs for medical geography, physical planning and decision support.

Lena Strömbäck, Ph.D., Linköping 1997. Assistant professor (*forskarassistent*), computational linguistics. Director of graduate studies for the HMI programme.

Natural language understanding, tools for grammar development, unification-based formalisms, models for natural language.

Toomas Timpka, MD., Stockholm 1983, Ph. D., Linköping 1989. Professor of Social Medicine and Public Health Sciences. Part time at the Department of Computer and Information Science, informatics. Group leader, MDA.

Hypermedia, computers and society, human-computer interaction, systems development.

Vivian Vimarlund, Ph.D. Linköping 1999. Assistant professor (*forskarassistent*), informatics.

IT och society, economic evaluations of implementation and use of IT, human-computer interaction, medical informatics, system developments.

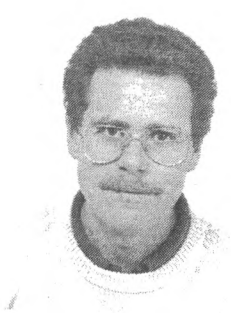
Information Systems and Management

Leif Appelgren, Lic.Eng. Consulting professor (*adjungerad professor*), economic information systems. Previous academic appointments with Linköping and Handelshöyskolen BI, Norway. Several previous affiliations. Current affiliation: Leif Appelgren Consulting AB.

Measurement and audit methods related to economic crime prevention.

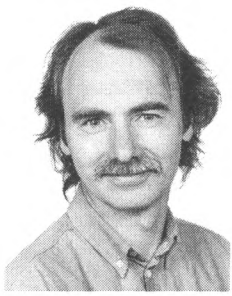
Karin Axelsson, Ph. D., Linköping 1998. Assistant professor (*forskarassistent*), information systems development.

Information systems architecture, theories on information systems development, inter-organisational business development, qualitative research methods.



Stefan Cronholm, Ph.D., Linköping 1998, Assistant professor *(universitetslektor)*, computer science. Co-leader, VITS. Director of undergraduate studies for the Information Systems Analysis Program.

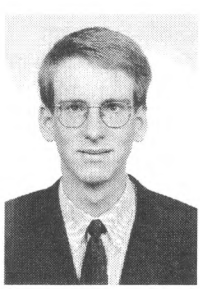
Theories/methods on business process and information systems development, method modelling, qualitative research methods, method tools, usability.



Göran Goldkuhl, Ph. D., Stockholm 1980. Professor of information systems development. Group leader, VITS. Part time professor of informatics, Jönköping International Business School. Research director VITS network. Research director at Centre for studies on Man, Technology and Organization. Previous affiliations: Stockholm, Göteborg.
Communicative action theories and methods for evaluation and design concerning inter-organisational networking, business processes, information systems, human-computer interaction, electronic commerce and knowledge management. Method modelling and renewal. Qualitative research aproaches.

Anna Moberg, Ph.D., Linköping 1997. Assistant professor, (*forskarassistent*), economic information systems.

IT and organizational design, communication, telework, non-territorial office.



Fredrik Nilsson, Ph. D., Linköping 1997. Assistant professor (*forskarassistent*), economic information systems. Manager at Deloitte & Touche Consulting Group.

Strategy and management control, environmentally-driven business development, valuation and accounting of intangible assets, production.

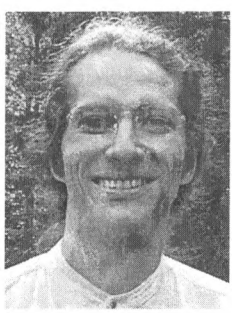
Tomas Ohlin, Fil lic., Stockholm 1971. Consulting professor (*adjungerad professor*), economic information systems, especially public systems. Previous affiliations: Stockholm University, public research planning, government IT administration.

Information society, value added online services, citizen oriented dialogue systems, IT supported democracy.

Nils-Göran Olve, Econ. Dr., Stockholm 1977. Consulting professor (*adjungerad professor*), management control. Positions with the Stockholm School of Economics and EIASM in Brussels. Partner in Cepro Management Consultants since 1986.
Management issues arising from IT-enabled business change, especially how accounting, control, and pricing could be modified to provide information and incentives appropriate for the new business situation.

Birger Rapp, Econ. Dr., Stockholm 1974, Professor of economic information systems. Group leader, EIS. Head of the Division for Information Systems and Management. Among many other appointments president of the board of the Swedish Teleworking Association, Distansforum and program director in Management and Economic Information Systems at IMIT.
Accounting, business control, agency theory, IT and organization, production, economics.

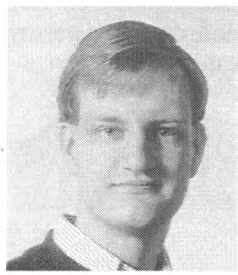
Rolf Rundfelt, Ph. D., Stockholm 1974. Consulting professor (*adjungerad professor*), economic information systems, especially in Swedish and international Financial Accounting. Docent in Business Administration, University of Stockholm. Since 1966, lecturer at the University of Stockholm.



Alf Westelius, Econ. Dr., SSE Stockholm, 1996. Assistant professor (*universitetslektor*), economic information systems, especially electronic commerce and knowledge management. Previous affiliations: The Stockholm School of Economics, the Ministry of Culture.

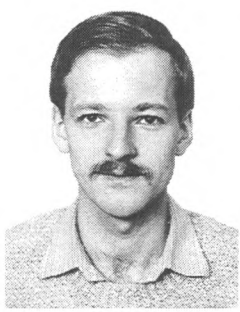
Knowledge management, project management, electronic commerce, change management and implementation processes.

Software and Systems



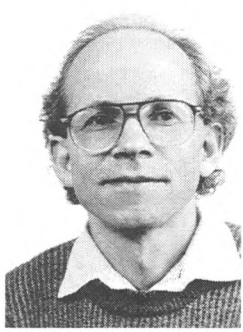
Christer Bäckström, Ph. D., Linköping 1992. Associate professor (*docent, universitetslektor*).

Planning and temporal reasoning, algorithms and complexity, model-based diagnosis.



Wlodzimierz Drabent, Ph. D., Warsaw 1985. Associate professor (*docent, universitetslektor*), computer science. Associate professor at the Institute of Computer Science, Polish Academy of Sciences.

Logic programming: semantics, proving properties of programs, error/diagnosis, negation; programming languages semantics.



Petru Eles, Ph. D., Bucuresti 1993. Associate professor (*docent, universitetslektor)*, computer architectures. Previous affiliation: Technical University Timisoara, Romania.
Design of embedded systems, design automation for digital systems, real-time systems, hardware/software co-design, computer architectures, concurrent programming, hardware description languages and languages for system specification.

Johan Fagerström, Ph. D., Linköping 1988. Assistant professor (*universitetslektor*), computer science.

Distributed systems, object-oriented programming, object-oriented analysis and design, operating systems.

Dag Fritzson, Ph.D., Göteborg 1988. Consulting professor (*adjungerad professor*), engineering information systems especially scientific computing. Previous affiliation Chalmers University of Technology, Göteborg. Current affiliation SKF AB.

Modelling techniques, parallel simulation, visualization, machine element modelling, e.g. rolling bearings.

Peter Fritzson, Ph. D., Linköping 1984. Professor of programming systems and software engineering. Group leader, PELAB. Previous affiliations: Sun Micro Systems, USA, 1985-86, Linköping University Hospital 1976-79. LiU Physics dept., 1975-76.
Programming environments and languages, design languages and simulation environments, scientific computing, debugging tools, incremental compilation technology, compiler generation, compilers and development tools for parallel hardware.

Jörgen Hansson, Ph.D., Linköping University 1999. Assistant professor (*universitetslektor*), real time systems. Previous affiliations: University of Skövde and University of Virginia, Charlottesville.

Real-time systems, database support for embedded and real-time systems, real-time operating systems, distributed systems.

Peter Jonsson, Ph.D., Linköping 1996. Associate professor (*docent, universitetslektor*), computer science.

Construction and analysis of algorithms. Complexity theory.

Mariam Kamkar, Ph. D., Linköping 1993. Professor of software engineering. Head of the department of computer science.
Software engineering, software testing, program debugging, program analysis, optimization in compilers, programming environments and languages.

FACULTY ENGAGED IN THE GRADUATE STUDY PROGRAM

Jan Maluszynski, Ph. D., Warsaw 1973. Professor of programming theory. Several previous affiliations.

Constraint logic programming, formal methods in computer science.

Simin Nadjm-Tehrani, Ph. D., Linköping 1994. Assistant professor (*universitetslektor*), computer science. Group leader, RTSLAB.

Modelling and formal verification of embedded systems, hybrid (discrete/continuous) models, rule-based and synchronous languages, temporal logic, real-time systems.

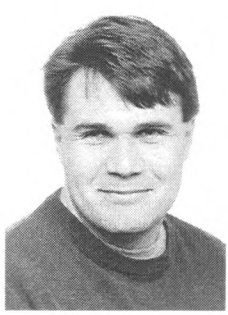
Ulf Nilsson, Ph. D., Linköping 1992. Associate professor (*docent, universitetslektor*), computer science. Deputy head of the department of computer science. Director of graduate study programme.Group leader, TCSLAB. Previous affiliation: State University of New York at Stony Brook, USA.
Logic programming and deductive databases; Model checking; Evaluation strategies for query processing; Program transformation and abstract interpretation.

Zebo Peng, Ph. D., Linköping 1987. Professor of computer systems. Group leader, ESLAB. Head of the Divison for Software and Systems.

Design and test of embedded systems, electronic design automation, design for testability, hardware/software co-design, real-time systems, computer architecture, VLSI.

Nancy Reed, Ph.D., University of Minnesota 1995. Assistant professor (*universitetslektor*), computer science. Previously at University of California, Davis.

Autonomous agents, knowledge-based systems, modelling human expert reasoning, real-time systems and specification languages for agents. Current application areas are agents in dynamic simulation environments and knowledge -based systems in diagnosis.



Kristian Sandahl, Ph. D., Linköping 1992. Consulting professor (*adjungerad professor*), computer science. Main affiliation Ericsson Radio Systems AB.

Knowledge management, knowledge engineering, industrial software engineering, quality improvement paradigm, empirical research methods, component-based design, inspection methods.

Anders Törne, Ph. D., Uppsala 1980. Part-time associate professor (*universitetslektor*), computer support in automation. Main affiliation is Carlstedt Research & Technology, Linköping.

Tools, methods and architecture for systems engineering and real-time system design. Applications in automation and embedded systems. Real-time programming and specification languages. Robot programming.

GUEST RESEARCHER AND AFFILIATED FACULTY ENGAGED IN THE GRADUATE STUDY PROGRAM

Sten F. Andler, Ph. D., Carnegie-Mellon University 1979. Professor of computer science, Högskolan i Skövde, (docent LiU), distributed systems, real-time systems, operating systems. Previous affiliations: IBM Software Solutions (1992-93) and Almaden Research Center (1979-92), San José, CA.
Distributed real-time systems, real-time databases, active real-time databases, distributed databases, real-time operating systems.

Roland Hjerppe, Director of Libraries, Mid Sweden University. Previous group leader, LIBLAB.

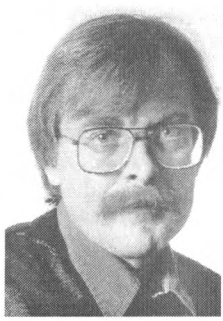
Library science and systems, hypertext and -media, knowledge organization and information retrieval, citation analysis and bibliometrics, personal and everyday life information/document management.

Bengt Lennartsson, Ph. D., Göteborg 1974. Associate professor (docent LiU), software engineering. Group leader, PELAB 1981-88 and head of the department of coumputer science 1983-90. Previous affiliation: Carlstedt Elektronik AB, Göteborg 1992-94. Current affiliation ITN, Campus Norrköping.
System development models, development of complex systems, organizational learning.

GUEST RESEARCHER AND AFFILIATED FACULTY ENGAGED IN THE GRADUATE STUDY PROGRAM

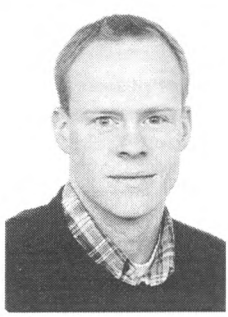
Witold Litwin, Professor University Paris 9. Guest professor Linköping, Stanford, Berkeley, Santa Clara university.

Distributed scalable data structures (SDDSs), multidatabase systems, storage structures, query languages.



Witold Lukaszewicz, Ph.D.,Warsaw University 1979. Guest professor. On leave from the Institute of Informatics, Warsaw University, Poland.

Knowledge representation, non-monotonic reasoning, programming methodology.

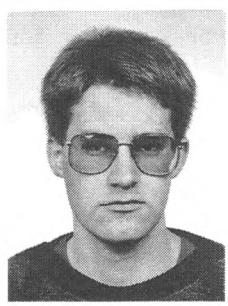


Jonas Löwgren, Ph. D., Linköping 1991. Associate professor (*docent, universitetslektor*), human-computer interaction. On leave since 97/98.

Human-computer interaction, usability-oriented systems development, interaction design.

GUEST RESEARCHER AND AFFILIATED FACULTY ENGAGED IN THE GRADUATE STUDY PROGRAM

Anders G. Nilsson, Econ Dr., Stockholm 1991. Professor of Informatics, University of Karlstad. Associate professor (docent, LiU) of information systems development in 1995. Acting professor of economic information systems in 1992. Previous affiliations: KTH, University of Stockholm and Stockholm School of Economics.
Application packages, business modelling, business process reengineering (BPR), information management, ISD methods, IS/IT strategies, maintenance management.



Henrik Nilsson, Ph. D., Linköping 1998. Assistant professor (*forskarassistent*), computer science.

Functional programming languages, programming language implementation, functional programming, declarative debugging.

James M. Nyce, Ph.D., Brown 1987. Guest professor (docent, LiU) computer and information science. Associate professor, School for Library and Information Management, Emporia State, Emporia, KS, USA. Previous affiliation Brown.

Work and knowledge (medicine and academia); tradition, innovation and technology; hypertext and visual resource developement paths.

Department of Computer and Information Science
Linköpings universitet

Dissertations

Linköping Studies in Science and Technology

No 14 **Anders Haraldsson:** A Program Manipulation System Based on Partial Evaluation, 1977, ISBN 91-7372-144-1.

No 17 **Bengt Magnhagen:** Probability Based Verification of Time Margins in Digital Designs, 1977, ISBN 91-7372-157-3.

No 18 **Mats Cedwall:** Semantisk analys av processbeskrivningar i naturligt språk, 1977, ISBN 91-7372-168-9.

No 22 **Jaak Urmi:** A Machine Independent LISP Compiler and its Implications for Ideal Hardware, 1978, ISBN 91-7372-188-3.

No 33 **Tore Risch:** Compilation of Multiple File Queries in a Meta-Database System 1978, ISBN 91-7372-232-4.

No 51 **Erland Jungert:** Synthesizing Database Structures from a User Oriented Data Model, 1980, ISBN 91-7372-387-8.

No 54 **Sture Hägglund:** Contributions to the Development of Methods and Tools for Interactive Design of Applications Software, 1980, ISBN 91-7372-404-1.

No 55 **Pär Emanuelson:** Performance Enhancement in a Well-Structured Pattern Matcher through Partial Evaluation, 1980, ISBN 91-7372-403-3.

No 58 **Bengt Johnsson, Bertil Andersson:** The Human-Computer Interface in Commercial Systems, 1981, ISBN 91-7372-414-9.

No 69 **H. Jan Komorowski:** A Specification of an Abstract Prolog Machine and its Application to Partial Evaluation, 1981, ISBN 91-7372-479-3.

No 71 **René Reboh:** Knowledge Engineering Techniques and Tools for Expert Systems, 1981, ISBN 91-7372-489-0.

No 77 **Östen Oskarsson:** Mechanisms of Modifiability in large Software Systems, 1982, ISBN 91-7372-527-7.

No 94 **Hans Lunell:** Code Generator Writing Systems, 1983, ISBN 91-7372-652-4.

No 97 **Andrzej Lingas:** Advances in Minimum Weight Triangulation, 1983, ISBN 91-7372-660-5.

No 109 **Peter Fritzson:** Towards a Distributed Programming Environment based on Incremental Compilation,1984, ISBN 91-7372-801-2.

No 111 **Erik Tengvald:** The Design of Expert Planning Systems. An Experimental Operations Planning System for Turning, 1984, ISBN 91-7372-805-5.

No 155 **Christos Levcopoulos:** Heuristics for Minimum Decompositions of Polygons, 1987, ISBN 91-7870-133-3.

No 165 **James W. Goodwin:** A Theory and System for Non-Monotonic Reasoning, 1987, ISBN 91-7870-183-X.

No 170 **Zebo Peng:** A Formal Methodology for Automated Synthesis of VLSI Systems, 1987, ISBN 91-7870-225-9.

No 174 **Johan Fagerström:** A Paradigm and System for Design of Distributed Systems, 1988, ISBN 91-7870-301-8.

No 192 **Dimiter Driankov:** Towards a Many Valued Logic of Quantified Belief, 1988, ISBN 91-7870-374-3.

No 213 **Lin Padgham:** Non-Monotonic Inheritance for an Object Oriented Knowledge Base, 1989, ISBN 91-7870-485-5.

No 214 **Tony Larsson:** A Formal Hardware Description and Verification Method, 1989, ISBN 91-7870-517-7.

No 221 **Michael Reinfrank:** Fundamentals and Logical Foundations of Truth Maintenance, 1989, ISBN 91-7870-546-0.

No 239 **Jonas Löwgren:** Knowledge-Based Design Support and Discourse Management in User Interface Management Systems, 1991, ISBN 91-7870-720-X.

No 244 **Henrik Eriksson:** Meta-Tool Support for Knowledge Acquisition, 1991, ISBN 91-7870-746-3.

No 252 **Peter Eklund:** An Epistemic Approach to Interactive Design in Multiple Inheritance Hierarchies,1991, ISBN 91-7870-784-6.

No 258 **Patrick Doherty:** NML3 - A Non-Monotonic Formalism with Explicit Defaults, 1991, ISBN 91-7870-816-8.

No 260 **Nahid Shahmehri:** Generalized Algorithmic Debugging, 1991, ISBN 91-7870-828-1.

No 264 **Nils Dahlbäck:** Representation of Discourse-Cognitive and Computational Aspects, 1992, ISBN 91-7870-850-8.

No 265 **Ulf Nilsson:** Abstract Interpretations and Abstract Machines: Contributions to a Methodology for the Implementation of Logic Programs, 1992, ISBN 91-7870-858-3.

No 270 **Ralph Rönnquist:** Theory and Practice of Tense-bound Object References, 1992, ISBN 91-7870-873-7.

No 273 **Björn Fjellborg:** Pipeline Extraction for VLSI Data Path Synthesis, 1992, ISBN 91-7870-880-X.

No 276 **Staffan Bonnier:** A Formal Basis for Horn Clause Logic with External Polymorphic Functions, 1992, ISBN 91-7870-896-6.

No 277 **Kristian Sandahl:** Developing Knowledge Management Systems with an Active Expert Methodology, 1992, ISBN 91-7870-897-4.

No 281 **Christer Bäckström:** Computational Complexity of Reasoning about Plans, 1992, ISBN 91-7870-979-2.

No 292 **Mats Wirén:** Studies in Incremental Natural Language Analysis, 1992, ISBN 91-7871-027-8.

No 297 **Mariam Kamkar:** Interprocedural Dynamic Slicing with Applications to Debugging and Testing, 1993, ISBN 91-7871-065-0.

No 302 **Tingting Zhang:** A Study in Diagnosis Using Classification and Defaults, 1993, ISBN 91-7871-078-2.

No 312 **Arne Jönsson:** Dialogue Management for Natural Language Interfaces - An Empirical Approach, 1993, ISBN 91-7871-110-X.

No 338 **Simin Nadjm-Tehrani**: Reactive Systems in Physical Environments: Compositional Modelling and Framework for Verification, 1994, ISBN 91-7871-237-8.

No 371 **Bengt Savén:** Business Models for Decision Support and Learning. A Study of Discrete-Event Manufacturing Simulation at Asea/ABB 1968-1993, 1995, ISBN 91-7871-494-X.

No 375 **Ulf Söderman:** Conceptual Modelling of Mode Switching Physical Systems, 1995, ISBN 91-7871-516-4.

No 383 **Andreas Kågedal:** Exploiting Groundness in Logic Programs, 1995, ISBN 91-7871-538-5.

No 396 **George Fodor:** Ontological Control, Description, Identification and Recovery from Problematic Control Situations, 1995, ISBN 91-7871-603-9.

No 413 **Mikael Pettersson:** Compiling Natural Semantics, 1995, ISBN 91-7871-641-1.

No 414 **Xinli Gu:** RT Level Testability Improvement by Testability Analysis and Transformations, 1996, ISBN 91-7871-654-3.

No 416 **Hua Shu:** Distributed Default Reasoning, 1996, ISBN 91-7871-665-9.

No 429 **Jaime Villegas:** Simulation Supported Industrial Training from an Organisational Learning Perspective - Development and Evaluation of the SSIT Method, 1996, ISBN 91-7871-700-0.

No 431 **Peter Jonsson:** Studies in Action Planning: Algorithms and Complexity, 1996, ISBN 91-7871-704-3.

No 437 **Johan Boye:** Directional Types in Logic Programming, 1996, ISBN 91-7871-725-6.

No 439 **Cecilia Sjöberg:** Activities, Voices and Arenas: Participatory Design in Practice, 1996, ISBN 91-7871-728-0.

No 448 **Patrick Lambrix:** Part-Whole Reasoning in Description Logics, 1996, ISBN 91-7871-820-1.

No 452 **Kjell Orsborn:** On Extensible and Object-Relational Database Technology for Finite Element Analysis Applications, 1996, ISBN 91-7871-827-9.

No 459 **Olof Johansson:** Development Environments for Complex Product Models, 1996, ISBN 91-7871-855-4.

No 461 **Lena Strömbäck:** User-Defined Constructions in Unification-Based Formalisms,1997, ISBN 91-7871-857-0.

No 462 **Lars Degerstedt:** Tabulation-based Logic Programming: A Multi-Level View of Query Answering, 1996, ISBN 91-7871-858-9.

No 475 **Fredrik Nilsson:** Strategi och ekonomisk styrning - En studie av hur ekonomiska styrsystem utformas och används efter företagsförvärv, 1997, ISBN 91-7871-914-3.

No 480 **Mikael Lindvall:** An Empirical Study of Requirements-Driven Impact Analysis in Object-Oriented Software Evolution, 1997, ISBN 91-7871-927-5.

No 485 **Göran Forslund**: Opinion-Based Systems: The Cooperative Perspective on Knowledge-Based Decision Support, 1997, ISBN 91-7871-938-0.

No 494 **Martin Sköld**: Active Database Management Systems for Monitoring and Control, 1997, ISBN 91-7219-002-7.

No 495 **Hans Olsén**: Automatic Verification of Petri Nets in a CLP framework, 1997, ISBN 91-7219-011-6.

No 498 **Thomas Drakengren:** Algorithms and Complexity for Temporal and Spatial Formalisms, 1997, ISBN 91-7219-019-1.

No 502 **Jakob Axelsson:** Analysis and Synthesis of Heterogeneous Real-Time Systems, 1997, ISBN 91-7219-035-3.

No 503 **Johan Ringström:** Compiler Generation for Data-Parallel Programming Langugaes from Two-Level Semantics Specifications, 1997, ISBN 91-7219-045-0.

No 512 **Anna Moberg:** Närhet och distans - Studier av kommunikationsmmönster i satellitkontor och flexibla kontor, 1997, ISBN 91-7219-119-8.

No 520 **Mikael Ronström:** Design and Modelling of a Parallel Data Server for Telecom Applications, 1998, ISBN 91-7219-169-4.

No 522 **Niclas Ohlsson:** Towards Effective Fault Prevention - An Empirical Study in Software Engineering, 1998, ISBN 91-7219-176-7.

No 526 **Joachim Karlsson:** A Systematic Approach for Prioritizing Software Requirements, 1998, ISBN 91-7219-184-8.

No 530 **Henrik Nilsson:** Declarative Debugging for Lazy Functional Languages, 1998, ISBN 91-7219-197-x.

No 555 **Jonas Hallberg:** Timing Issues in High-Level Synthesis,1998, ISBN 91-7219-369-7.

No 561 **Ling Lin:** Management of 1-D Sequence Data - From Discrete to Continuous, 1999, ISBN 91-7219-402-2.

No 563 **Eva L Ragnemalm:** Student Modelling based on Collaborative Dialogue with a Learning Companion, 1999, ISBN 91-7219-412-X.

No 567 **Jörgen Lindström:** Does Distance matter? On geographical dispersion in organisations, 1999, ISBN 91-7219-439-1.

No 582 **Vanja Josifovski:** Design, Implementation and Evaluation of a Distributed Mediator System for Data Integration, 1999, ISBN 91-7219-482-0.

No 589 **Rita Kovordányi**: Modeling and Simulating Inhibitory Mechanisms in Mental Image Reinterpretation - Towards Cooperative Human-Computer Creativity, 1999, ISBN 91-7219-506-1.

No 592 **Mikael Ericsson:** Supporting the Use of Design Knowledge - An Assessment of Commenting Agents, 1999, ISBN 91-7219-532-0.

No 593 **Lars Karlsson:** Actions, Interactions and Narratives, 1999, ISBN 91-7219-534-7.

No 594 **C. G. Mikael Johansson:** Social and Organizational Aspects of Requirements Engineering Methods - A practice-oriented approach, 1999, ISBN 91-7219-541-X.

No 595 **Jörgen Hansson:** Value-Driven Multi-Class Overload Management in Real-Time Database Systems, 1999, ISBN 91-7219-542-8.

No 596 **Niklas Hallberg:** Incorporating User Values in the Design of Information Systems and Services in the Public Sector: A Methods Approach, 1999, ISBN 91-7219-543-6.

No 597 **Vivian Vimarlund:** An Economic Perspective on the Analysis of Impacts of Information Technology: From Case Studies in Health-Care towards General Models and Theories, 1999, ISBN 91-7219-544-4.

No 598 **Johan Jenvald:** Methods and Tools in Computer-Supported Taskforce Training, 1999, ISBN 91-7219-547-9.

No 607 **Magnus Merkel:** Understanding and enhancing translation by parallel text processing, 1999, ISBN 91-7219-614-9.

No 611 **Silvia Coradeschi:** Anchoring symbols to sensory data, 1999, ISBN 91-7219-623-8.

No 613 **Man Lin:** Analysis and Synthesis of Reactive Systems: A Generic Layered Architecture Perspective, 1999, ISBN 91-7219-630-0.

No 618 **Jimmy Tjäder:** Systemimplementering i praktiken - En studie av logiker i fyra projekt, 1999, ISBN 91-7219-657-2.

No 627 **Vadim Engelson:** Tools for Design, Interactive Simulation, and Visualization of Object-Oriented Models in Scientific Computing, 2000, ISBN 91-7219-709-9.

No 637 **Esa Falkenroth:** Database Technology for Control and Simulation, 2000, ISBN 91-7219-766-8.

No 639 **Per-Arne Persson:** Bringing Power and Knowledge Together: Information Systems Design for Autonomy and Control in Command Work, 2000, ISBN 91-7219-796-X.

No 660 **Erik Larsson:** An Integrated System-Level Design for Testability Methodology, 2000, ISBN 91-7219-890-7.

No 688 **Marcus Bjäreland:** Model-based Execution Monitoring, 2001, ISBN 91-7373-016-5.

No 689 **Joakim Gustafsson:** Extending Temporal Action Logic, 2001, ISBN 91-7373-017-3.

Linköping Studies in Information Science

No 1 **Karin Axelsson:** Metodisk systemstrukturering - att skapa samstämmighet mellan informationssystemarkitektur och verksamhet, 1998. ISBN-9172-19-296-8.

No 2 **Stefan Cronholm:** Metodverktyg och användbarhet - en studie av datorstödd metodbaserad systemutveckling, 1998. ISBN-9172-19-299-2.

No 3 **Anders Avdic:** Användare och utvecklare - om anveckling med kalkylprogram, 1999. ISBN-91-7219-606-8.

No 4 **Owen Eriksson:** Kommunikationskvalitet hos informationssystem och affärsprocesser, 2000. ISBN 91-7219-811-7.

No 5 **Mikael Lind:** Från system till process - kriterier för processbestämning vid verksamhetsanalys, 2001, ISBN 91-7373-067-X

Linköping Studies in Science and Technology
Faculty of Arts and Sciences - Theses

No 17 **Vojin Plavsic:** Interleaved Processing of Non-Numerical Data Stored on a Cyclic Memory. (Available at: FOA, Box 1165, S-581 11 Linköping, Sweden. FOA Report B30062E)

No 28 **Arne Jönsson, Mikael Patel:** An Interactive Flowcharting Technique for Communicating and Realizing Algorithms, 1984.

No 29 **Johnny Eckerland:** Retargeting of an Incremental Code Generator, 1984.

No 48 **Henrik Nordin:** On the Use of Typical Cases for Knowledge-Based Consultation and Teaching, 1985.

No 52 **Zebo Peng:** Steps Towards the Formalization of Designing VLSI Systems, 1985.

No 60 **Johan Fagerström:** Simulation and Evaluation of Architecture based on Asynchronous Processes, 1985.

No 71 **Jalal Maleki:** ICONStraint, A Dependency Directed Constraint Maintenance System, 1987.

No 72 **Tony Larsson:** On the Specification and Verification of VLSI Systems, 1986.

No 73 **Ola Strömfors:** A Structure Editor for Documents and Programs, 1986.

No 74 **Christos Levcopoulos:** New Results about the Approximation Behavior of the Greedy Triangulation, 1986.

No 104 **Shamsul I. Chowdhury:** Statistical Expert Systems - a Special Application Area for Knowledge-Based Computer Methodology, 1987.

No 108 **Rober Bilos:** Incremental Scanning and Token-Based Editing, 1987.

No 111 **Hans Block:** SPORT-SORT Sorting Algorithms and Sport Tournaments, 1987.

No 113 **Ralph Rönnquist:** Network and Lattice Based Approaches to the Representation of Knowledge, 1987.

No 118 **Mariam Kamkar, Nahid Shahmehri:** Affect-Chaining in Program Flow Analysis Applied to Queries of Programs, 1987.

No 126 **Dan Strömberg:** Transfer and Distribution of Application Programs, 1987.

No 127 **Kristian Sandahl:** Case Studies in Knowledge Acquisition, Migration and User Acceptance of Expert Systems, 1987.

No 139 **Christer Bäckström:** Reasoning about Interdependent Actions, 1988.

No 140 **Mats Wirén:** On Control Strategies and Incrementality in Unification-Based Chart Parsing, 1988.

No 146 **Johan Hultman:** A Software System for Defining and Controlling Actions in a Mechanical System, 1988.

No 150 **Tim Hansen:** Diagnosing Faults using Knowledge about Malfunctioning Behavior, 1988.

No 165 **Jonas Löwgren:** Supporting Design and Management of Expert System User Interfaces, 1989.

No 166 **Ola Petersson:** On Adaptive Sorting in Sequential and Parallel Models, 1989.

No 174 **Yngve Larsson:** Dynamic Configuration in a Distributed Environment, 1989.

No 177 **Peter Åberg:** Design of a Multiple View Presentation and Interaction Manager, 1989.

No 181 **Henrik Eriksson:** A Study in Domain-Oriented Tool Support for Knowledge Acquisition, 1989.

No 184 **Ivan Rankin:** The Deep Generation of Text in Expert Critiquing Systems, 1989.

No 187 **Simin Nadjm-Tehrani:** Contributions to the Declarative Approach to Debugging Prolog Programs, 1989.

No 189 **Magnus Merkel:** Temporal Information in Natural Language, 1989.

No 196 **Ulf Nilsson:** A Systematic Approach to Abstract Interpretation of Logic Programs, 1989.

No 197 **Staffan Bonnier:** Horn Clause Logic with External Procedures: Towards a Theoretical Framework, 1989.

No 203 **Christer Hansson:** A Prototype System for Logical Reasoning about Time and Action, 1990.

No 212 **Björn Fjellborg:** An Approach to Extraction of Pipeline Structures for VLSI High-Level Synthesis, 1990.

No 230 **Patrick Doherty:** A Three-Valued Approach to Non-Monotonic Reasoning, 1990.

No 237 **Tomas Sokolnicki:** Coaching Partial Plans: An Approach to Knowledge-Based Tutoring, 1990.

No 250 **Lars Strömberg:** Postmortem Debugging of Distributed Systems, 1990.

No 253 **Torbjörn Näslund:** SLDFA-Resolution - Computing Answers for Negative Queries, 1990.

No 260 **Peter D. Holmes:** Using Connectivity Graphs to Support Map-Related Reasoning, 1991.

No 283 **Olof Johansson:** Improving Implementation of Graphical User Interfaces for Object-Oriented Knowledge-Bases, 1991.

No 298 **Rolf G Larsson:** Aktivitetsbaserad kalkylering i ett nytt ekonomisystem, 1991.

No 318 **Lena Strömbäck:** Studies in Extended Unification-Based Formalism for Linguistic Description: An Algorithm for Feature Structures with Disjunction and a Proposal for Flexible Systems, 1992.

No 319 **Mikael Pettersson:** DML-A Language and System for the Generation of Efficient Compilers from Denotational Specification, 1992.

No 326 **Andreas Kågedal:** Logic Programming with External Procedures: an Implementation, 1992.

No 328 **Patrick Lambrix:** Aspects of Version Management of Composite Objects, 1992.

No 333 **Xinli Gu:** Testability Analysis and Improvement in High-Level Synthesis Systems, 1992.

No 335 **Torbjörn Näslund:** On the Role of Evaluations in Iterative Development of Managerial Support Sytems, 1992.

No 348 **Ulf Cederling:** Industrial Software Development - a Case Study, 1992.

No 352 **Magnus Morin:** Predictable Cyclic Computations in Autonomous Systems: A Computational Model and Implementation, 1992.

No 371 **Mehran Noghabai:** Evaluation of Strategic Investments in Information Technology, 1993.

No 378 **Mats Larsson:** A Transformational Approach to Formal Digital System Design, 1993.

No 380 **Johan Ringström:** Compiler Generation for Parallel Languages from Denotational Specifications, 1993.

No 381 **Michael Jansson:** Propagation of Change in an Intelligent Information System, 1993.

No 383 **Jonni Harrius:** An Architecture and a Knowledge Representation Model for Expert Critiquing Systems, 1993.

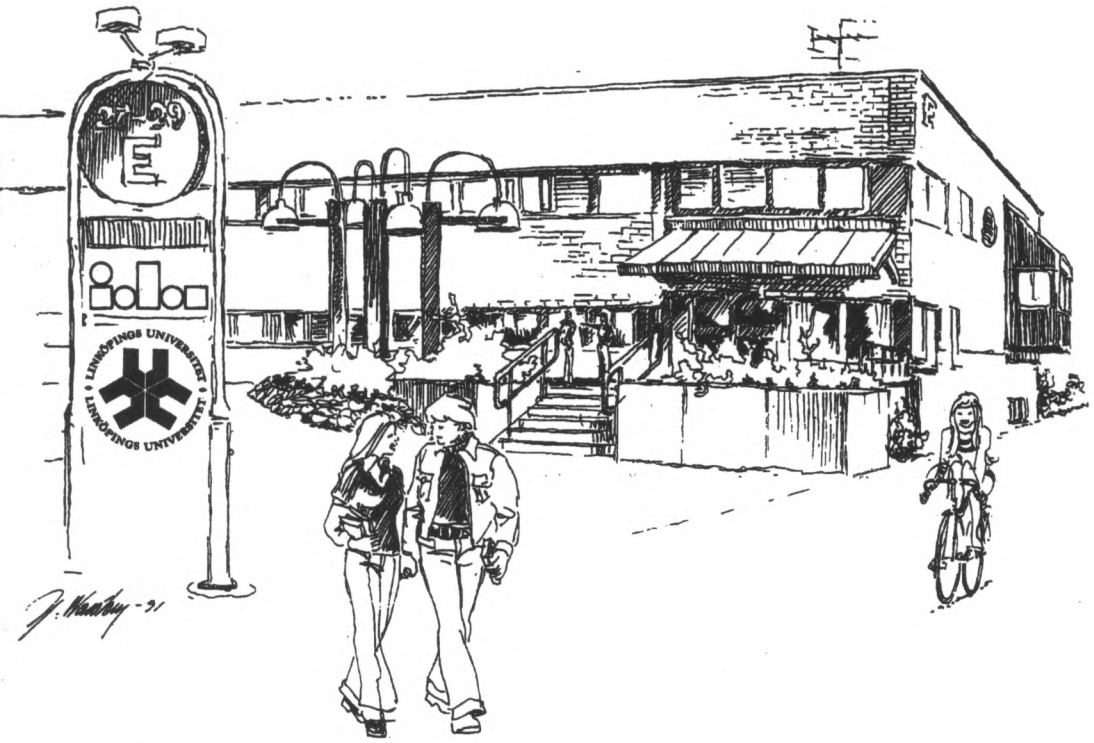
No 386 **Per Österling:** Symbolic Modelling of the Dynamic Environments of Autonomous Agents, 1993.

No 398 **Johan Boye:** Dependency-based Groudness Analysis of Functional Logic Programs, 1993.

No 402	**Lars Degerstedt:** Tabulated Resolution for Well Founded Semantics, 1993.
No 406	**Anna Moberg:** Satellitkontor - en studie av kommunikationsmönster vid arbete på distans, 1993.
No 414	**Peter Carlsson:** Separation av företagsledning och finansiering - fallstudier av företagsledarutköp ur ett agentteoretiskt perspektiv, 1994.
No 417	**Camilla Sjöström:** Revision och lagreglering - ett historiskt perspektiv, 1994.
No 436	**Cecilia Sjöberg:** Voices in Design: Argumentation in Participatory Development, 1994.
No 437	**Lars Viklund:** Contributions to a High-level Programming Environment for a Scientific Computing, 1994.
No 440	**Peter Loborg:** Error Recovery Support in Manufacturing Control Systems, 1994.
FHS 3/94	**Owen Eriksson:** Informationssystem med verksamhetskvalitet - utvärdering baserat på ett verksamhetsinriktat och samskapande perspektiv, 1994.
FHS 4/94	**Karin Pettersson:** Informationssystemstrukturering, ansvarsfördelning och användarinflytande - En komparativ studie med utgångspunkt i två informationssystemstrategier, 1994.
No 441	**Lars Poignant:** Informationsteknologi och företagsetablering - Effekter på produktivitet och region, 1994.
No 446	**Gustav Fahl:** Object Views of Relational Data in Multidatabase Systems, 1994.
No 450	**Henrik Nilsson:** A Declarative Approach to Debugging for Lazy Functional Languages, 1994.
No 451	**Jonas Lind:** Creditor - Firm Relations: an Interdisciplinary Analysis, 1994.
No 452	**Martin Sköld:** Active Rules based on Object Relational Queries - Efficient Change Monitoring Techniques, 1994.
No 455	**Pär Carlshamre:** A Collaborative Approach to Usability Engineering: Technical Communicators and System Developers in Usability-Oriented Systems Development, 1994.
FHS 5/94	**Stefan Cronholm:** Varför CASE-verktyg i systemutveckling? - En motiv- och konsekvensstudie avseende arbetssätt och arbetsformer, 1994.
No 462	**Mikael Lindvall:** A Study of Traceability in Object-Oriented Systems Development, 1994.
No 463	**Fredrik Nilsson:** Strategi och ekonomisk styrning - En studie av Sandviks förvärv av Bahco Verktyg, 1994.
No 464	**Hans Olsén:** Collage Induction: Proving Properties of Logic Programs by Program Synthesis, 1994.
No 469	**Lars Karlsson:** Specification and Synthesis of Plans Using the Features and Fluents Framework, 1995.
No 473	**Ulf Söderman:** On Conceptual Modelling of Mode Switching Systems, 1995.
No 475	**Choong-ho Yi:** Reasoning about Concurrent Actions in the Trajectory Semantics, 1995.
No 476	**Bo Lagerström:** Successiv resultatavräkning av pågående arbeten. - Fallstudier i tre byggföretag, 1995.
No 478	**Peter Jonsson:** Complexity of State-Variable Planning under Structural Restrictions, 1995.
FHS 7/95	**Anders Avdic:** Arbetsintegrerad systemutveckling med kalkylkprogram, 1995.
No 482	**Eva L Ragnemalm:** Towards Student Modelling through Collaborative Dialogue with a Learning Companion, 1995.
No 488	**Eva Toller:** Contributions to Parallel Multiparadigm Languages: Combining Object-Oriented and Rule-Based Programming, 1995.
No 489	**Erik Stoy:** A Petri Net Based Unified Representation for Hardware/Software Co-Design, 1995.
No 497	**Johan Herber:** Environment Support for Building Structured Mathematical Models, 1995.
No 498	**Stefan Svenberg:** Structure-Driven Derivation of Inter-Lingual Functor-Argument Trees for Multi-Lingual Generation, 1995.
No 503	**Hee-Cheol Kim:** Prediction and Postdiction under Uncertainty, 1995.
FHS 8/95	**Dan Fristedt:** Metoder i användning - mot förbättring av systemutveckling genom situationell metodkunskap och metodanalys, 1995.
FHS 9/95	**Malin Bergvall:** Systemförvaltning i praktiken - en kvalitativ studie avseende centrala begrepp, aktiviteter och ansvarsroller, 1995.
No 513	**Joachim Karlsson:** Towards a Strategy for Software Requirements Selection, 1995.
No 517	**Jakob Axelsson:** Schedulability-Driven Partitioning of Heterogeneous Real-Time Systems, 1995.
No 518	**Göran Forslund:** Toward Cooperative Advice-Giving Systems: The Expert Systems Experience, 1995.
No 522	**Jörgen Andersson:** Bilder av småföretagares ekonomistyrning, 1995.
No 538	**Staffan Flodin:** Efficient Management of Object-Oriented Queries with Late Binding, 1996.
No 545	**Vadim Engelson:** An Approach to Automatic Construction of Graphical User Interfaces for Applications in Scientific Computing, 1996.
No 546	**Magnus Werner :** Multidatabase Integration using Polymorphic Queries and Views, 1996.
FiF-a 1/96	**Mikael Lind:** Affärsprocessinriktad förändringsanalys - utveckling och tillämpning av synsätt och metod, 1996.
No 549	**Jonas Hallberg:** High-Level Synthesis under Local Timing Constraints, 1996.
No 550	**Kristina Larsen:** Förutsättningar och begränsningar för arbete på distans - erfarenheter från fyra svenska företag. 1996.
No 557	**Mikael Johansson:** Quality Functions for Requirements Engineering Methods, 1996.
No 558	**Patrik Nordling:** The Simulation of Rolling Bearing Dynamics on Parallel Computers, 1996.
No 561	**Anders Ekman:** Exploration of Polygonal Environments, 1996.
No 563	**Niclas Andersson:** Compilation of Mathematical Models to Parallel Code, 1996.
No 567	**Johan Jenvald:** Simulation and Data Collection in Battle Training, 1996.
No 575	**Niclas Ohlsson:** Software Quality Engineering by Early Identification of Fault-Prone Modules, 1996.
No 576	**Mikael Ericsson:** Commenting Systems as Design Support—A Wizard-of-Oz Study, 1996.
No 587	**Jörgen Lindström:** Chefers användning av kommunikationsteknik, 1996.
No 589	**Esa Falkenroth:** Data Management in Control Applications - A Proposal Based on Active Database Systems, 1996.
No 591	**Niclas Wahllöf:** A Default Extension to Description Logics and its Applications, 1996.
No 595	**Annika Larsson:** Ekonomisk Styrning och Organisatorisk Passion - ett interaktivt perspektiv, 1997.
No 597	**Ling Lin:** A Value-based Indexing Technique for Time Sequences, 1997.

No 598 **Rego Granlund:** C^3Fire - A Microworld Supporting Emergency Management Training, 1997.
No 599 **Peter Ingels:** A Robust Text Processing Technique Applied to Lexical Error Recovery, 1997.
No 607 **Per-Arne Persson:** Toward a Grounded Theory for Support of Command and Control in Military Coalitions, 1997.
No 609 **Jonas S Karlsson:** A Scalable Data Structure for a Parallel Data Server, 1997.
FiF-a 4 **Carita Åbom:** Videomötesteknik i olika affärssituationer - möjligheter och hinder, 1997.
FiF-a 6 **Tommy Wedlund**: Att skapa en företagsanpassad systemutvecklingsmodell - genom rekonstruktion, värdering och vidareutveckling i T50-bolag inom ABB, 1997.
No 615 **Silvia Coradeschi**: A Decision-Mechanism for Reactive and Coordinated Agents, 1997.
No 623 **Jan Ollinen:** Det flexibla kontorets utveckling på Digital - Ett stöd för multiflex? 1997.
No 626 **David Byers:** Towards Estimating Software Testability Using Static Analysis, 1997.
No 627 **Fredrik Eklund:** Declarative Error Diagnosis of GAPLog Programs, 1997.
No 629 **Gunilla Ivefors:** Krigsspel coh Informationsteknik inför en oförutsägbar framtid, 1997.
No 631 **Jens-Olof Lindh:** Analysing Traffic Safety from a Case-Based Reasoning Perspective, 1997
No 639 **Jukka Mäki-Turja:**. Smalltalk - a suitable Real-Time Language, 1997.
No 640 **Juha Takkinen**: CAFE: Towards a Conceptual Model for Information Management in Electronic Mail, 1997.
No 643 **Man Lin**: Formal Analysis of Reactive Rule-based Programs, 1997.
No 653 **Mats Gustafsson**: Bringing Role-Based Access Control to Distributed Systems, 1997.
FiF-a 13 **Boris Karlsson:** Metodanalys för förståelse och utveckling av systemutvecklingsverksamhet. Analys och värdering av systemutvecklingsmodeller och dess användning, 1997.
No 674 **Marcus Bjäreland:** Two Aspects of Automating Logics of Action and Change - Regression and Tractability, 1998.
No 676 **Jan Håkegård**: Hiera rchical Test Architecture and Board-Level Test Controller Synthesis, 1998.
No 668 **Per-Ove Zetterlund**: Normering av svensk redovisning - En studie av tillkomsten av Redovisningsrådets rekommendation om koncernredovisning (RR01:91), 1998.
No 675 **Jimmy Tjäder**: Projektledaren & planen - en studie av projektledning i tre installations- och systemutvecklingsprojekt, 1998.
FiF-a 14 **Ulf Melin**: Informationssystem vid ökad affärs- och processorientering - egenskaper, strategier och utveckling, 1998.
No 695 **Tim Heyer**: COMPASS: Introduction of Formal Methods in Code Development and Inspection, 1998.
No 700 **Patrik Hägglund:** Programming Languages for Computer Algebra, 1998.
FiF-a 16 **Marie-Therese Christiansson:** Inter-organistorisk verksamhetsutveckling - metoder som stöd vid utveckling av partnerskap och informationssystem, 1998.
No 712 **Christina Wennestam:** Information om immateriella resurser. Investeringar i forskning och utveckling samt i personal inom skogsindustrin, 1998.
No 719 **Joakim Gustafsson:** Extending Temporal Action Logic for Ramification and Concurrency, 1998.
No 723 **Henrik André-Jönsson:** Indexing time-series data using text indexing methods, 1999.
No 725 **Erik Larsson:** High-Level Testability Analysis and Enhancement Techniques, 1998.
No 730 **Carl-Johan Westin:** Informationsförsörjning: en fråga om ansvar - aktiviteter och uppdrag i fem stora svenska organisationers operativa informationsförsörjning, 1998.
No 731 **Åse Jansson:** Miljöhänsyn - en del i företags styrning, 1998.
No 733 **Thomas Padron-McCarthy:** Performance-Polymorphic Declarative Queries, 1998.
No 734 **Anders Bäckström:** Värdeskapande kreditgivning - Kreditriskhantering ur ett agentteoretiskt perspektiv, 1998.
FiF-a 21 **Ulf Seigerroth:** Integration av förändringsmetoder - en modell för välgrundad metodintegration, 1999.
FiF-a 22 **Fredrik Öberg:** Object-Oriented Frameworks - A New Strategy for Case Tool Development, 1998.
No 737 **Jonas Mellin:** Predictable Event Monitoring, 1998.
No 738 **Joakim Eriksson:** Specifying and Managing Rules in an Active Real-Time Database System, 1998.
FiF-a 25 **Bengt E W Andersson:** Samverkande informationssystem mellan aktörer i offentliga åtaganden - En teori om aktörsarenor i samverkan om utbyte av information, 1998.
No 742 **Pawel Pietrzak:** Static Incorrectness Diagnosis of CLP (FD), 1999.
No 748 **Tobias Ritzau:** Real-Time Reference Counting in RT-Java, 1999.
No 751 **Anders Ferntoft:** Elektronisk affärskommunikation - kontaktkostnader och kontaktprocesser mellan kunder och leverantörer på producentmarknader,1999.
No 752 **Jo Skåmedal:** Arbete på distans och arbetsformens påverkan på resor och resmönster, 1999.
No 753 **Johan Alvehus:** Mötets metaforer. En studie av berättelser om möten, 1999.
No 754 **Magnus Lindahl:** Bankens villkor i låneavtal vid kreditgivning till högt belånade företagsförvärv: En studie ur ett agentteoretiskt perspektiv, 2000.
No 766 **Martin V. Howard:** Designing dynamic visualizations of temporal data, 1999.
No 769 **Jesper Andersson:** Towards Reactive Software Architectures, 1999.
No 775 **Anders Henriksson:** Unique kernel diagnosis, 1999.
FiF-a 30 **Pär J. Ågerfalk:** Pragmatization of Information Systems - A Theoretical and Methodological Outline, 1999.
No 787 **Charlotte Björkegren:** Learning for the next project - Bearers and barriers in knowledge transfer within an organisation, 1999.
No 788 **Håkan Nilsson:** Informationsteknik som drivkraft i granskningsprocessen - En studie av fyra revisionsbyråer, 2000.
No 790 **Erik Berglund:** Use-Oriented Documentation in Software Development, 1999.
No 791 **Klas Gäre:** Verksamhetsförändringar i samband med IS-införande, 1999.
No 800 **Anders Subotic:** Software Quality Inspection, 1999.
No 807 **Svein Bergum**: Managerial communication in telework, 2000.

No 809	**Flavius Gruian:** Energy-Aware Design of Digital Systems, 2000.
FiF-a 32	**Karin Hedström:** Kunskapsanvändning och kunskapsutveckling hos verksamhetskonsulter - Erfarenheter från ett FOU-samarbete, 2000.
No 808	**Linda Askenäs:** Affärssystemet - En studie om teknikens aktiva och passiva roll i en organisation, 2000.
No 820	**Jean Paul Meynard:** Control of industrial robots through high-level task programming, 2000.
No 823	**Lars Hult:** Publika Gränsytor - ett designexempel, 2000.
No 832	**Paul Pop:** Scheduling and Communication Synthesis for Distributed Real-Time Systems, 2000.
FiF-a 34	**Göran Hultgren:** Nätverksinriktad Förändringsanalys - perspektiv och metoder som stöd för förståelse och utveckling av affärsrelationer och informationssystem, 2000.
No 842	**Magnus Kald:** The role of management control systems in strategic business units, 2000.
No 844	**Mikael Cäker:** Vad kostar kunden? Modeller för intern redovisning, 2000.
FiF-a 37	**Ewa Braf**: Organisationers kunskapsverksamheter - en kritisk studie av "knowledge management", 2000.
FiF-a 40	**Henrik Lindberg:** Webbaserade affärsprocesser - Möjligheter och begränsningar, 2000.
FiF-a 41	**Benneth Christiansson:** Att komponentbasera informationssystem - Vad säger teori och praktik?, 2000.
No. 854	**Ola Pettersson:** Deliberation in a Mobile Robot, 2000.
No 863	**Dan Lawesson**: Towards Behavioral Model Fault Isolation for Object Oriented Control Systems, 2000.
No 881	**Johan Moe:** Execution Tracing of Large Distributed Systems, 2001.
No 882	**Yuxiao Zhao:** XML-based Frameworks for Internet Commerce and an Implementation of B2B e-procurement, 2001.
No 894	**Stefan Svarén**: Styrning av investeringar i divisionaliserade företag - Ett koncernperspektiv, 2001.


LINKÖPINGS UNIVERSITET
LINKÖPINGS UNIVERSITET

LINKÖPINGS UNIVERSITET

Department of Computer Information Science (IDA)
SE-582 83 Linköping
Sweden