Pedogagogical portfolio
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Patrick Lambrix

CONTENT:

Note on credits: Before 2007 Swedish course credits were based on 'poäng' (p) where 1p requires ca 1 week full-time work for the students - 1 year = 40p. Afterwards 'högskolepoäng' (hp) were used where 1p = 1.5hp. Also 1hp = 1 ECTS, where 1 ECTS is a credit in the European Credit Transfer System.

1 Education

Teaching degree (sw: gymnasielärare) in mathematics from the Katholieke Universiteit Leuven (1988).

Course: 'Base group tutor for problem-based learning' (sw: Basgruppshandledarkurs) from the Centrum för Universitetspedagogik, Linköping University (1996).

Course: 'Leadership in undergraduate education' (sw: Ledarskap i grundutbildningen) from the Centrum för Universitetspedagogik, Linköping University (2000).

2 Teaching - courses for PhD students

Course leader

since 2012: Advanced Data Models and Databases, CUGS, Swedish National Graduate School in Computer Science, 6hp. (Replaces 'Databases' for CUGS)

> The aim of the course is to give knowledge on issues underlying the design and implementation of particular types of modern database systems. The course addresses semi-structured data, XML, RDF, OWL, NoSQL databases, semantic web, ontologies, information retrieval, and integration models for access to heterogeneous information sources. I co-developed, co-taught and examined the course.

(*National*) 2017: Big Data Analytics - Swedish e-Science Education Graduate School (SeSE). (Together with Christoph Kessler, José Pena, Rickard Armiento))

> In this course we introduce the notion of Big Data and study how we can store, manage, query and analyze this kind of data. We discussed big data issues regarding data management, parallel programming and machine learning. I co-developed, co-taught and co-examined the course.

(*National*) 2008: Biomedical Information - Knowledge Engineering and Text Mining, PhD Programme in Medical Bioinformatics (FMB forskarskola i

medicinsk bioinformatik), given at Karolinska Institutet, Stockholm. New course.

In this course we discuss the vision of a Semantic Web for biomedical informatics with a focus on modeling, organization and management of biomedical data for improved access and search. We discuss two important technologies that are needed to make this vision happen: knowledge engineering and text mining. Further, we exemplify these approaches through real cases in a pharmaceutical company and demonstrate different systems. I developed the course together with members of my group and a representative from AstraZeneca and gave the lectures on semantic web and ontology engineering.

(*National*) 2002, 2003, 2005, 2007, 2008: Databases, CUGS, Swedish National Graduate School in Computer Science, 3p/4.5hp. New course.

The aim of the course is to give knowledge on issues underlying the design and implementation of particular types of modern database systems. The course addresses object-oriented and extended relational database systems, semi-structured data and integration models for access to heterogeneous information sources. I developed, taught and examined the course.

2004: Fundamentals of modern database systems, ECSEL, graduate school of the Excellence Center for Computer Science and Systems Engineering in Linköping, 3p.

The aim of this course is to give a thorough introduction to the theoretical and practical issues underlying the design and implementation of relational database systems. This is an introductory course in databases. I taught and examined the course.

1998, 2002: Intelligent Software Agents, Linköping University, 4+3 p. New course. (Together with Nahid Shahmehri)

The aim of the course is to give the participants a good understanding of the principles and use of intelligent software agents technology and let them gain experience in the design and implementation of intelligent agents in various applications. The course consists of a theory part and a project. The course was developed, taught and examined together with Nahid Shahmehri.

1996, 1999: Introduction to Description Logics, Linköping University, 4 p. New course.

> The aim of the course is to give the students a good understanding of the principles of description logics, to let them use a number of description logic systems and to discuss some areas of current development in description logics. I developed, taught and examined the course.

2005, 2012, 2022: Introduction to Logic/ Logic I, Linköping University, 1 p/3hp. New course.

> The aim of the course is to give the students a short introduction in logic, and in particular propositional logic, predicate logic and description logics. In the 2012 version I also introduced Datalog. I developed, taught and examined the course.

2003: Logics for the web, Linköping University, 3 p. New course. (Together with Jan Maluszynski)

> In the Semantic Web, logic plays an important role. Different logics are proposed for different purposes. The goal of the course is to survey this vision, to give an introduction to the relevant logical formalisms and to discuss the ongoing research. The course was developed, taught and examined together with Jan Maluszynski.

2011: Ontologies and ontology engineering, Linköping University, 3 p. New course.

> This course introduces ontologies, shows applications that use ontologies and discusses how to engineer ontologies. I developed, taught and examined the course.

2019, 2020: Sports Analytics, 6hp. New course.

> Sports analytics deals with using data related to sports events to obtain insights about the sport and its surroundings. The insights can relate to such things as player and team performance, strategies, training, injuries, and rules of the game. The aim of this course is to gain an understanding of the research issues related to sports analytics, to obtain knowledge about problems in sports analytics and algorithms for solving these problems, and to be able to use relevant algorithms in a sports analytics application. I developed, taught and examined the course.

Lecturer

(*National*) 2003, 2005: An orientation in bioinformatics methods, graduate course in the PhD Programme in Medical Bioinformatics, Karolinska institutet.

> I held lectures on database modeling and integration of biological data sources. In 2005 I also held a lecture on a semantic web for bioinformatics.

2001: Bioinformatics, graduate course at the Faculty of Health Sciences, Linköping University.

> I held a lecture on biological data sources.

2001: Bioinformatics, graduate course at the Department of Computer Science, Linköping University.

> I held a lecture on biological data sources.

(*National*) 2002, 2004: Data mining and applications in science and technology, NGSSC, Swedish National Graduate School in Scientific Computing.

> I held lectures and exercise sessions on databases and was supervisor for projects in databases.

(*International - Summer school*) 2008: HIT-MSRA Summer school on Human Language Technology, Harbin Institute of Technology, China.

> I held lectures and developed and supervised a project in ontology engineering.

1999: Introduction to Machine Learning, Linköping University, 5p.

> I held a lecture on combining inductive and analytical learning.

2006: Modern Information Retrieval, Linköping University, 3+2 p.

> I held a lecture on semantic web and ontologies.

(*International - Summer school*) 2006: Reasoning Web, Summer school, Lisbon, Portugal.

> Together with Michael Schroeder, TU Dresden, I developed lectures on topics regarding a semantic web for the life sciences.

(*International*) 2002: Representation formalisms for ontologies, graduate course in Copenhagen, Denmark in connection with the Fifth International Conference on Flexible Query Answering Systems.

> I held lectures on part-whole reasoning and ontologies.

(*National*) 2018: Semantic Web Technologies - Swedish e-Science Education Graduate School (SeSE).

> I prepared lectures on description logics and on ontology alignment and debugging.

Teaching - courses for MSc and BSc students

Course leader

since 2011 (lecturer 2009-2010): Advanced Data Models and Databases, Linköping University, Master level computer science and computer engineering students, 6hp, 20-40 students.

> The course is organized in different themes with lectures and labs. I designed half of the course (lectures and labs) dealing with object-oriented data management, semantic web and ontologies, description logics and OWL, integration of data sources, and ontology alignment and debugging. I co-developed the course, held half of the lectures and was examiner.

1996-1999: Algorithms and Optimization, Linköping University, second year information technology students (IT2), 6.5 p (3.5 p), 30 students. New theme.

> This theme is part of a program based on Problem-Based Learning. The theme consists of a part on data structures and algorithms (3.5 p) and a part on optimization techniques (3 p). I developed the theme in cooperation with Maud Göthe-Lundgren from the mathematics department. The theme and examination are provided as an integrated whole of which I was responsible for the data structures and algorithms part. I taught the data structures and algorithms lectures as well as the lab sessions. I was also responsible for the theme as a whole.

1997-2002: Artificial Intelligence, Linköping University, third year computer engineering students (D3), 3.5 p, 100 students and second year computer science students (C2), 4.5 p, 30 students.

The first part of the course gives an overview of the field of artificial intelligence. The second part of the course (only for computer science students) involves reading articles, writing a report and giving a presentation. During this part researchers in artificial intelligence at the department tutor the students. During this part we cooperate with the course 'Praktisk Svenska' of the department of communication as well. In the course I taught lectures and was examiner.

1996-1999: Artificial Intelligence and Lisp, Linköping University, third year computer engineering (short program) students (DI3) and fourth year industrial engineering and management students (I4, Ii4), 4.5 p, 30 students.

The course includes the study of the programming language Lisp and gives an overview of the field of artificial intelligence. In the course I taught lectures as well as tutorials and labs. I was examiner as well.

2016, 2018-2019 (lecturer since 2020): Big Data Analytics, Linköping University, fourth year computer engineering students (D4), fourth year industrial engineering students (I4), fourth year information technology students (IT4), fourth year software technology students (U4), MSc students computer science (CS), MSc students in Statistics and Data Mining, 6hp, 80 students.

In this course we introduce the notion of Big Data and study how we can store, manage, query and analyze this kind of data. We discussed big data issues regarding data management, parallel programming and machine learning. I co-developed, co-taught and examined the course.

2003-2007: Computational and Mathematical Aspects in Bioinformatics, Linköping University, third year computer science (C3) and fourth year engineering biology students (TB4), 5 p, 5-10 students.

The course gives an overview on selected topics in bioinformatics with a focus on computational methods. In the course I taught half of the lectures and was examiner. The teachers in the course belonged to the departments of computer science, mathematics and physics.

2002-2010: Databases and/for Bioinformatics, Linköping University, third year engineering biology students (TB3), 4 p/6hp, 70 students.

> The course aims to give an introduction to the theoretical and practical issues underlying the design and implementation of modern biological database systems that are used in bioinformatics research. I held most of the lectures and was examiner. Some years I taught during the lab sessions. I also introduced and supervised a much appreciated project for the students in the area of biological data sources.

2001: Databases and Datastructures, Linköping University, third year engineering biology students (TB3) and fourth year mechanical engineering students (M4), 4.5 p, 60 students.

> The course aims to give theoretical and practical knowledge in the area of databases. The course includes database design and management, query languages and data structures for databases. The focus is on relational databases with SQL as query language. I held half of the lectures and was examiner.

2009-2010: Databases Technology, Linköping University, several computer science and engineering related programs, 6hp, 100 students.

> The course aims to give theoretical and practical knowledge in the area of databases. The course includes database design and management, query languages and data structures for databases. The focus is on relational databases with SQL as query language. I held half of the lectures and was examiner.

since 2008: Data Mining - Clustering and Association Analysis/Advanced Data Mining, Linköping University, MSc students in Statistics and Data Mining/Machine Learning, MSc students in computer science, fourth year computer engineering students (D4), fourth year industrial engineering students (I4), fourth year information technology students (IT4), fourth year software technology students (U4), 15hp/6hp, 40-100 students.

> The course lays the foundation for professional work and research in which large amounts of data are explored, modified, modelled and assessed to uncover previously unknown patterns and trends. The course focuses on clustering and association analysis. In the short version of the course, I held half of the lectures and

labs and was examiner. In the long version, additionally I was
project supervisor and supervisor for the student lectures. I also
developed half of the course.

2009-2010 (course project supervisor 2013): Data Mining Project, Linköping
University, MSc students in Statistics and Data Mining, 6hp, 5 students.
    The students learn through a project to use their knowledge
    obtained within their specialization. They also learn to plan,
    perform and present a research or development project. The
    project is connected to current research and is done under the
    guidance of a supervisor. I developed this course, was supervi-
    sor for projects in the area of data and text mining as well as
    examiner.

1993, 2009-2011: Data Structures and Algorithms, Linköping University,
second year computer engineering students (D2), 4.5 p, 120 students; second
year computer engineering and inovative programming students, 6 hp, 50
students.
    The aim of the course is to present basic abstract data types and
    describe efficient implementations in terms of data structures
    and procedures. Further, methods are introduced for design and
    analysis of algorithms. In the course I taught the lectures and
    was examiner.

since 2020: Sports Analytics, 6hp. New course.
    Sports analytics deals with using data related to sports events
    to obtain insights about the sport and its surroundings. The in-
    sights can relate to such things as player and team performance,
    strategies, training, injuries, and rules of the game. The aim
    of this course is to gain an understanding of the research issues
    related to sports analytics, to obtain knowledge about problems
    in sports analytics and algorithms for solving these problems,
    and to be able to use relevant algorithms in a sports analytics
    application. I developed, taught and examined the course.

Lecturer

2001-2012: Bioinformatics - introduction and practical applications / Bioin-
formatics - medical applications, Linköping University, fourth year engineer-
ing biology students (TB4), 3.5 p, and fourth year medical biology students

(MB4), 5 p, 10-50 students.
    I held a lecture on biological data sources and/or semantic web
    for bioinformatics .

since 1999: Several courses on databases, Linköping University. Second year
computer science (C2), fourth year computer engineering (D4) and fourth
year civil engineering (Y4) students, 5 p, 160 students. Second and third
year engineering (short program) students (DI2, EI3, DE3), 4 p, 70 students.
Third year engineering biology students (TB3), 4.5 p, 40 students. Third
year industrial engineering and management students (I3), 5 p, 90 students.
Fourth year mechanical engineering students (M4), 2 p, 20 students.
    I held lectures on different database topics.

2006: Multimedia Information Retrieval, Linköping University, third and
fourth year computer engineering (D3,D4), information technology (IT3,IT4)
and computer science (C3,C4) students, 7p, 10 students.
    I held a lecture on semantic web and ontologies and co-developed
    a lab on ontology engineering.

2004, 2007, 2009: Research at LiTH, all engineering students.
    I held a lecture on our research in the area of semantic web for
    the life sciences.

2007: Technical prerequisites and user requirements, , Linköping University,
third and fourth year computer engineering (D3,D4), information technology
(IT3,IT4) and computer science (C3,C4) students, 6p, 10 students.
    I held a lecture on semantic web and ontologies.

2014-2018: Text mining, , Linköping University, Master Statistics and Data
Mining, PhD students, 6p, 10 students.
    I held lectures on information retrieval.

Course project supervisor

2001-2002, 2005-2007: Project Molecular Biotechnology / Project Bioinfor-
matics, Linköping University, fourth year engineering biology (TB4) and
Chemical Biology (KeBi4) students, 5 p.

The students learn through a project to use their knowledge obtained within their specialization. They also learn to plan, perform and present a research or development project. The project is connected to current research and is done under the guidance of a supervisor. In this course I was supervisor for projects in the area of databanks and ontologies for bioinformatics.

2019: Research project, Linköping University, MSc students in Statistics and Machine Learning, 6hp.

The students learn through a project to use their knowledge obtained within their specialization. They also learn to plan, perform and present a research or development project. The project is connected to current research and is done under the guidance of a supervisor. In this course I was supervisor for projects in the area of sports analytics.

Guest lecturer

1998: I held a guest lecture on knowledge-based information retrieval in a programming theory course for second year computer science students, Linköping University.

1995: I held a lecture on risk analysis in a project management course for third year engineering students, RMIT University.

Teaching assistant

1988: Calculus and Differential Geometry, Katholieke Universiteit Leuven, first year engineering students.

In this course I was responsible for exercise sessions.

1991: Methodology of Program Development and Programming Development Project, Linköping University, fourth year computer engineering students (D4), 6.5 p.

In this course I was customer for one project group of six students.

1989: Numerical Analysis, Katholieke Universiteit Leuven, first year engineering students.

In this course I was responsible for exercise sessions.

1996: Programming, Linköping University, second year information technology students (IT2), 4.5 p, 30 students. New theme.

> This theme is part of a program based on Problem-Based Learning. The theme includes study of the programming language C++, object-oriented methodology, and data structures and algorithms. In this theme I was responsible for lab sessions and I was a resource person. I was also responsible for part of the examination.

1995: Programming - Applications and Data Structures, Linköping University, third year civil engineering students (Y3), 5 p, 200 students. New course.

> In this course the programming language C++ is studied with emphasis on abstract data types and algorithms. Further, the students obtain experience in object-oriented analysis, design and implementation through a project. For this course I taught tutorial and lab sessions and did the course administration. I also developed some of the tutorial sessions.

Specialization mentor

1998-1999: Specialization mentor for the Media Informatics specialization for computer science (C), computer engineering (D) and information technology (IT) students.

> A specialization mentor creates together with each of his students an individual study plan for that student within the specialization. (The specialization requires 20 points of study.) The study plan concerns the whole specialization and consists of a number of courses, a number of topics that can be studied on a more detailed level as well as skills that the student wants to obtain. The mentor has a guidance role as well as an examination role.

Teaching - courses for professionals

2019: I was lecturer in the course 'AI och digitalisering, översiktskurs' for professionals.

1997: I cooperated in a two-day course on Problem-Based Learning organized by the Centrum för Universitetspedagogik for employees at Linköping University.

PhD student supervision and examination

I am/have been supervisor for the following PhD students:

> Huanyu Li (PhD 2022)
> PhD: Ontology-Driven Data Access and Data Integration with an Application in the Materials Design Domain.

> Valentina Ivanova (Lic 2014, PhD 2018)
> PhD: Fostering User Involvement in Ontology Alignment and Alignment Evaluation.
> Lic: Integration of Ontology Alignment and Ontology Debugging for Taxonomy Networks.

> Zlatan Dragisic (Lic 2014, PhD 2017)
> PhD: Completion of ontologies and ontology networks.
> Lic: Completing the Is-a Structure in Description Logics Ontologies.

> Qiang Liu (Lic 2011)
> Lic: Dealing with Missing Mappings and Structure in a Network of Ontologies.

> He Tan (Lic 2006, PhD 2007)
> PhD: Aligning Biomedical Ontologies.
> Lic: Aligning and Merging Biomedical Ontologies.

> Vaida Jakonienė (Lic 2005, PhD 2006)
> PhD: Integration of Biological Data.
> Lic: A Study in Integrating Multiple Biological Data Sources.

I have been advisor (sw: bihandledare) for the following PhD students:

> Le Minh Ha (PhD 2024)
> PhD: Beyond Recognition: Privacy Protections in a Surveilled World.

Alireza Mohammadinodooshan (PhD 2024)
PhD: Data-driven Contributions to Understanding User Engagement Dynamics on Social Media.

Sijin Cheng (PhD 2024)
PhD: Query Processing over Heterogeneous Federations of Graph Data.

Ola Leifler (PhD 2011)
PhD: Affordances and constraints of intelligent decision support for military command and control - three case studies of support systems.

Cécile Åberg (Lic 2005, PhD 2007)
PhD: An Evaluation Platform for Semantic Web Technology.
Lic: Integration of Organizational Workflows and the Semantic Web.

Henrik André-Jönsson (PhD 2002)
PhD: Indexing strategies for time series data.

Juha Takkinen (Lic 1997, PhD 2002)
PhD: From Information Management to Task Management in Electronic Mail.
Lic: CAFE: Towards a Conceptual Model for Information Management in Electronic Mail.

Niclas Wahllöf (Lic 1996)
Lic: A Default Extension to Description Logics and its Applications.

I have been member of the examination committee for the following PhD theses:

(backup) Mariusz Wzorek (2023), LiU/IDA.
Selected Functionalities for Autonomous Intelligent Systems in Public Safety Scenarios.

(backup) Natalia Skripnyak (2020), LiU/IFM.
Theoretical description of Ti and Ti Alloys from first principles.

Nicholas Baltzer (2019), Uppsala University, Sweden.
Predicitive Healthcare: Cervical Cancer Screening Risk Stratification and Genetic Disease Markers.

Amina Annane (2018), Montpellier University, France.
Using Background Knowledge to Enhance Biomedical Ontology Matching.

Leif Jonsson (2018), LiU/IDA.
Machine Learning-Based Bug Handling in Large-Scale Software Development.

Thanh Truong (2016), Uppsala University, Sweden.
Main-Memory Query Processing Utilizing External Indexes.

Magnus Ingmarsson (2013), LiU/IDA.
Creating and enabling the useful service discovery experience.

Fredrik Lysholm (2013), LiU/IFM.
Bioinformatic methods for characterization of viral pathogens in metagenomic samples.

Kerstin Ådahl (2012), Blekinge Institute of Technology, Sweden.
On decision support in participatory medicine supporting health care empowerment.

Joel Hedlund (2010), LiU/IFM.
Bioinformatic protein family characterisation.

Merja Karjalainen (2010), Chalmers University of Technology, Sweden.
A Uniform Query Processing Approach for Integrating Data for Heterogeneous Resources.

Jetendr Shamdasani (2010), University of the West of England, Bristol, UK.
Semantic Matching for the Medical Domain.

Aida Vitoria (2010), LiU/ITN.
Reasoning with Rough Sets and Paraconsistent Rough Sets.

Mikael Nyström (2010), LiU/IMT.
Enrichment of Terminology Systems for Use and Reuse in Medical Information Systems.

(backup) Martin Berzell (2010), LiU/IMH.
Electronic Healthcare Ontologies - Philosophy, the Real World and IT structures.

Jonas Carlsson (2009), LiU/IFM.
Mutational effects on protein structure and function.

Eva Blomqvist (2009), LiU/Jönköping.
Semi-automatic Ontology Construction based on Patterns.

Fredrik Heintz (2009), LiU/IDA.
DyKnow - A Stream-Based Knowledge Processing Middleware Framework.

Andreas Doms (2009), TU Dresden, Germany.
GoPubMed: Ontology-based literature search.

Waclaw Kusnierczyck (2008), NTNU, Trondheim, Norway.
Augmenting Bioinformatics Research with Biomedical Ontologies.

Anders Bresell (2008), LiU/IFM.
Characterization of protein families, sequence patterns, and functional annotations in large data sets.

Thomas Gustafsson (2007), LiU/IDA.
Management of Real-Time Data Consistency and Transient Overloads in Embedded Systems.

Yuxiao Zhao (2005), LiU/IDA.
Standards-based application integration for bussiness-to-business communications.

Håkan Petersson (2003), LiU/IMT.
On information quality in primary health care registries.

Mathias Broxvall (2002), LiU/IDA.
A study in the computational complexity of temporal reasoning.

I have been faculty opponent for the following Lic/half-way-PhD theses/seminars:

Erik Sundsvall (2011), LiU/IMT.
Information visualization, ontologies and Electronic Health Records.

Mikael Nyström (2009), LiU/IMT.
Analyser av medicinska terminologisystem.

Marie Gustafsson (2006), Chalmers Tekniska Högskola/Göteborgs universitet.
Design, development and adoption of ontology-driven clinical software.

MSc and BSc thesis supervision and examination

I have been main supervisor/examiner for the following M.Sc. theses in my research group:

Samuelsson N,
Shooting for Perfection - Leveraging Basketball Movement Data to Predict Shot Accuracy,
LIU-IDA/LITH-EX-A–23/079–SE.

Usman Y,
Context Matters for Evaluating the Performance of Ice Hockey Players,
LIU-IDA/LITH-EX-A–22/104–SE.

Baby D, Shi M,
NHL Game Prediction and Season Simulation,
LIU-IDA/LITH-EX-A–22/099–SE.

Ljung D,
Using Reinforcement Learning to Evaluate Player Pair Performance in Ice Hockey,
LIU-IDA/LITH-EX-A–21/014–SE.

Vik J,
Not All Goals Are Created Equal - Evaluating Hockey Players in the NHL Using Q-Learning with a Contextual Reward Function,
LIU-IDA/LITH-EX-A–21/008–SE.

Zhang T,
A topic model-based approach for ontology extension in the computational materials science domain,
LiTH-IDA/ERASMUS-A–20/001–SE.

Leshi OA,
An Approach to Extending Ontologies in the Nanomaterials Domain,
LIU-IDA/LITH-EX-A–20/064–SE.

Gonzalez Dos Santos T,
NBA Game Prediction and Season Simulation - Statistics Applied to Sport,
LIU-IDA/STAT-A–19/005–SE.

Sans Fuentes C,
Markov Decision Processes and ARIMA models to analyze and predict ice hockey player's performance,
LIU-IDA/STAT-A–19/001–SE.

Nsolo E,
Prediction models for soccer sports analytics,
LIU-IDA/LITH-EX-A–18/021–SE.

Gao Z,
Reducing the Search Space of Ontology Alignment Using Clustering Techniques,
LiTH-IDA/ERASMUS-A–17/003–SE.

Zhao Y,
An Improved Design and Implementation of the Session-based SAMBO with Parallelization Techniques and MongoDB,
LiTH-IDA/ERASMUS-A–17/002–SE.

Li H,
The Design and Implementation of Optimization Approaches for Large Scale Ontology Alignment in SAMBO,
LiTH-IDA/ERASMUS-A–17/001–SE (2016).

Boujari T,
Instance-based ontology alignment using decision trees,
LIU-IDA/LITH-EX-A–12/055–SE.

Qadeer S,
Integration of recommendation and partial reference alignment algorithms in a session-based ontology alignment system,
LIU-IDA/LITH-EX-A–11/038SE.

Hassan J, Munib M,
Detecting Missing IS-A Relations in Ontologies,
LIU-IDA/LITH-EX-A–10/051–SE.

Kahn MZ,
A session-based system for aligning large ontologies,
LIU-IDA/LITH-EX-A–10/034–SE.

Laurila Bergman J,
Ontology Slice Generation and Alignment for Enhanced Life Science,
LIU-IDA/LITH-EX-A–09/002–SE.

Xu W,
SVM-cased algorithms for aligning ontologies using literature,
LIU-IDA/LITH-EX-A–08/058–SE.

Rundqvist D,
Grouping biological data,
LITH-IDA-EX–06/029–SE.
Best Undergraduate Thesis Award 2006 at the Department of Computer and Information Science, Linköping University.

Chen B,
Structure-based ontology alignment,
LITH-IDA-EX–06/019–SE.

Zhang P,
A user interface for SAMBO using ontology visualization tools,
LITH-IDA-EX–06/018–SE.

Chétrit H,
A Tool for Facilitating Ontology Construction from Texts,
LiTH-IDA-EX-04/017-SE.

Tan H,
Merging DAML+OIL Bio-Ontologies,
LiTH-IDA-EX-03/51-SE.

Hernandéz Lopéz R,
Semi-automatic wrapper generation for biological databanks,
LiTH-IDA-Ex-03/27.

Edberg A,
Förening av ontologier inom bioinformatik,
LiTH-IDA-Ex-02/62.
Best Undergraduate Thesis Award 2002 at the Department of Computer and Information Science, Linköping University.

Jacobsen S,
A Hybrid System for Knowledge-Based Information Retrieval,
LiTH-IDA-Ex-97/59.
Best Undergraduate Thesis Award 1997 at the Department of Computer and Information Science, Linköping University.

Larocchia P,
Learning Composite Concepts in Description Logics,
LiTH-IDA-Ex-9657.

Åberg J,
Creating a Description Logics Knowledge Base for World-Wide Web Documents,
LiTH-IDA-Ex-9641.

Weiersmüller M,
An NFS-Based Interface to LINCKS,
LiTH-IDA-Ex-9618.

I have been main supervisor/examiner for the following B.Sc. theses in my research group:

Örnberg D,
Comparison and implementation of graph visualization algorithms using JavaFX,
LIU-IDA/LITH-EX-G–16/080–SE.

Sund D,
Comparison of Visualization Algorithms for Graphs and Implementation of Visualization Algorithm for Multi-Touch table using JavaFX,
LIU-IDA/LITH-EX-G–16/076–SE.

Abdulahad B, Lounis G,
A user interface for the ontology merging tool SAMBO,
LITH-IDA-EX-ING-04/020-SE.

Manis C,
Ontology Merge - a web-based application for merging ontologies,
LiTH-IDA-Ex-Ing-02/32.

Habbouche M, Pérez M,
Utvärdering av ontologiverktyg för bioinformatik,
LiTH-IDA-Ex-Ing-02/10.

Schlick E,
Re-Search - A search engine for previously seen web pages,
LiTH-IDA-Ex-Ing-99/2.

I have been examiner for the following external M.Sc. theses or M.Sc. theses with another internal supervisor:

Olivestam A, Rosendahl A,
Player Type Classification in Ice Hockey Using Soft Clustering,
LIU-IDA/LITH-EX-A–24/027–SE, (Färjestad BK).

Andersson A,
Inverse reinforcement learning to evaluate goal impact in ice hockey,
LIU-IDA/LITH-EX-A–25/006–SE, (N Carlsson).

Palaiologos B,
Ontology-based information extraction from legacy surveillance reports of infectious diseases in animals and humans.,
LIU-IDA/LITH-EX-A–20/073–SE, (National Veterinary Institute/Statens Veterinärmedicinska Anstalt, Uppsala).

Sikiric K,
Gambling safety net - Predicting the risk of problem gambling using Bayesian networks,
LIU-IDA/LITH-EX-A–20/012–SE, (ATG, Stockholm).

Lindström P,
Deep Imitation Learning on Spatio-Temporal Data with Multiple Adversarial Agents Applied on Soccer,
LIU-IDA/LITH-EX-A–19/036–SE, (Signality, Linköping).

Rooth A,
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Wong K-L,
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Gustavsson F,
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Brodén M,
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Lundell T,
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Ahrén C, Wiktor M,
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Boutros B,
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Silvson A,
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Assawakhachonsak A,
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LiTH-IDA-Ex-00/77.

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Construction of reusable components - a pragmatic strategy,

LiTH-IDA-Ex-00/92, (Ibitec Datakonsult AB, Linköping).

Linder H, Nygren Y,
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LiTH-IDA-Ex-00/53, (Linq, Stockholm).

Bergsten A,
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LiTH-IDA-Ex-00/43, (Erda, Linköping).

Björendahl M, Glans D,
SAP eCommerce for the Aviation Industry - Introducing SPEC2000/XML,
LiTH-IDA-Ex-00/29, (SAP AG, Walldorf, Germany).

Lundberg J,
NetPassage - ett verktyg för tidningsproduktion,
LiTH-IDA-Ex-00/23, (Media Support & Development, Norrköping).

Jakobsson M, Söderqvist J,
Intelligent distribution of software components to thin clients,
LiTH-IDA-Ex-00/6 (Ida Systems AB, Linköping).

Widholm A,
Evaluation of strategies for communication from Oracle in a het-
erogeneous distributed system,
LiTH-IDA-Ex-99/105 (IFS AB, Linköping).

Doberhof J,
Statistikverktyg för COMVIQs radiolänknät,
LiTH-IDA-Ex-99/97 (Comviq GSM AB, Stockholm).

Björkman M,
Distributed database over insecure connections,
LiTH-IDA-Ex-99/87 (Trix Systems AB, Vegby).

Bergqvist J,
Resolving the Service Level Agreement,
LiTH-IDA-Ex-99/84, (QiTEL AB, Linköping).

Andåker K,
Implementing an Internet Messaging Framework,
LiTH-IDA-Ex-99/47, (IBM Research, New York, USA).

I have been examiner for the following external B.Sc. theses:

Rynell R, Persson J,
Ett scoutingverktyg aat Linköping Hockey Club,
LIU-IDA/LITH-EX-G–21/058–SE, (Linköping Hockey Club).

Stjernberg F, Tell J,
Scout Enhancer - En applikation som visualiserar spelardata för att förbättra scouting processer,
LIU-IDA/LITH-EX-G–21/051–SE, (Linköping Hockey Club).

Carsting T, Gummesson J,
GoalMate - An Application for Visualization of Ice Hockey Statistics,
LIU-IDA/LITH-EX-G–21/049–SE, (Linköping Hockey Club).

Johansson C, Lesicki D,
Undersökning av energiförbrukningen i laassystem,
LIU-IDA/LITH-EX-G–19/061–SE, (Phoniro Assa Abloy AB, Norrköping).

Karlsson A, Wngblad C,
En kvalitativ jämförelse av opensource-navigeringsprogram med OpenStreetMap som kartdatabas,
LIU-IDA/LITH-EX-G–18/067–SE, (TaxiCaller, Linköping).

Axelsson J,
Implementering av PostgreSQL som databashanterare för MONITOR,
LIU-IDA/LITH-EX-G–14/083SE, (Monitor ERP System AB, Hudiksvall).

Lind J,
Utveckling av internt administrationssystem,
LIU-IDA/LITH-EX-G–12/020–SE, (Ericsson, Linköping).

Filipsson J,
Integrationskatalog - teknisk dokumentation av ett integrerat system,
LIU-IDA/LITH-EX-G–13/052–SE, (Ipendo Systems, Linköping).

Eriksson O,
A web-based tool for managing intellectual property laws,
LIU-IDA/LITH-EX-G–13/046–SE, (Ipendo Systems, Linköping).

Abrahamsson M,
A platform for third-party applications on the web,
LIU-IDA/LITH-EX-G–13/038–SE, (Ipendo Systems, Linköping).

Säll R,
En utredning av meddelande-orienterade lager för Twingly,
LIU-IDA/LITH-EX-G–13/026–SE, (Twingly, Linköping).

Pettersson M,
Utv¨ärdering av inläsning av XML- kontra flätfiler,
LIU-IDA/LITH-EX-G–12/028–SE, (Skatteverket, Visby).

Gustavsson D, Öberg C,
Optimering av prestanda och utnyttjande av flertrådsteknik,
LIU-IDA/LITH-EX-G–09/016–SE (Medius, Linköping).

Lindblad M,
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LITH-IDA-EX-ING–06/002–SE, (Ericsson, Linköping).

Påhlsson A,
Lagring och sökning av XML i relationsdatabassystem,
Lith-IDA-EX-Ing-02/6, (Mediate AB).

Andersson U,
User interface development for maintenance of a test library,
Lith-IDA-EX-Ing-02/4, (Flextronics AB).

Bevonius J,
VDL Mode4, solution and revolution for air traffic control,
LiTH-IDA-Ex-Ing-00/14, (Luftfartsverket, Norrköping).

Lind C, Pourjanaki A,
Felanmälan via e-box,
LiTH-IDA-Ex-Ing-00/13, (Ericsson, Linköping).

Röör M, Åberg C,
Marknadsundersökning för en supportenhet på QiTEL AB,
LiTH-IDA-Ex-Ing-99/9, (QiTEL AB, Linköping).

Berg R, Frodin L, Johansson A,
VEMT - Visual Environment Modeling Tool,
LiTH-IDA-Ex-Ing-99/6, (Intentia, Linköping).

Svensson L, Josefsson M, Stålhammar M,
Implementation av en applikation för hantering av serviceordrar under Windows CE,
LiTH-IDA-Ex-Ing-99/3, (Intentia, Linköping).

Fürst E,

Utvärdering av webutvecklingsverktyg,
LiTH-IDA-Ex-Ing-98/9, (Cap Gemini, Linköping).

Research

Publications

Färnqvist T, Heintz F, **Lambrix P**, Mannila L, Wang C, Supporting Active Learning by Introducing an Interactive Teaching Tool in a Data Structures and Algorithms Course, *47th ACM Technical Symposium on Computer Science Education - SIGCSE 2016*, 663-668, Memphis, Tennessee, USA, 2016.

Färnqvist T, Heintz F, **Lambrix P**, Mannila L, Wang C, Supporting Active Learning Using an Interactive Teaching Tool in a Data Structures and Algorithms Course, *5:e Utvecklingskonferensen för Sveriges ingenjörsutbildningar*, 76-79, Uppsala, Sweden, 2015.

Lambrix P, Strömbäck L, Teaching databases to hundreds of engineering students, *2nd Workshop on Computer Science Education*, Linköping, Sweden, 2007.

Hoffmann Y, **Lambrix P**, Takkinen J, Kamkar M, Muddy Cards en praktisk användning, *5:e universitetspedagogiska konferensen vid Linköpings universitet*, 146-150, Linköping, Sweden, 2001.

Shahmehri N, Åberg J, **Lambrix P**, Projects as a means for subject learning and personal development under student responsibility, *2nd International Conference on Problem-based Learning in Higher Education*, 66, Linköping, Sweden, 2000.

Lambrix P, Ouchterlony U, Integration of Psychology, Economics and Information Technology in an Engineering Curriculum, *Computer Science Education*, 9(2):162-180, 1999.

Lambrix P, Ouchterlony U, Samarbete Teknik - Psykologi - Ekonomi, *3:e universitetspedagogiska konferensen vid Linköpings universitet*, 7-9, Linköping, Sweden, 1999.

Lambrix P, Kamkar M, Computer Science as an Integrated Part of Engineering Education, *3rd ACM SIGCSE/SIGCUE Conference on Integrating Technology into Computer Science Education*, 153-156, Dublin, Ireland,

1998.

Lambrix P, Göthe Lundgren M, Kamkar M, Integrated Engineering Education, *Verklighet och Vision - 1:a universitetspedagogiska konferensen vid Linköpings universitet*, Linköping, Sweden, 1997. (An abstract of this paper appeared under the title Computer Science as an Integrated Part of Engineering Education Proceedings of the ACM SIGCSE/SIGCUE Conference on Integrating Technology into Computer Science Education - Poster Session, 151, Uppsala, Sweden, 1997.)

Presentations

In addition to presentations related to the published articles, I presented the following:

An Observation Study on the Use of an Interactive e-book in a Data Structures and Algorithms Course, with Chunyan Wang, *LiU Pedagogical Day*, 2015.

Integration av psykologi, ekonomi och informationsteknologi, *Högskolekonferensen*, Linköping, Sweden, 1998.

Grants

I was co-applicant of the project 'Pedagogiska aspekter på införandet av e-läromedel i datastruktur- och algoritmkurs' (2014) and 'Inverterat klassrum med hjälp av interaktivt läromedel för datastrukturer och algoritmer' (2016).

I was involved in the NyIng project. NyIng (Förnyelse av ingenjörs- och civilingenjörsutbildningarna) was a project under the auspices of the Swedish government with as goal to evaluate engineering education in Sweden and suggest ways to improve this education.

Program development, leadership and evaluation

I am program coordinator and member of the Planning Committee for the Master program in Computer Science at Linköping University.

I was program coordinator for the Master program of the National Graduate School in Computer Science.

I co-developed the Master program in Statistics, Data Analysis and Knowledge Discovery (now: Statistics and Machine Learning) at Linköping University.

I developed and was co-responsible for specializations in bioinformatics for the Computer Science and Engineering Biology curricula.

I am member of the Program planning group (PPG) of the board of Computer Science & Engineering and Media Technology.

I was member of the Education Board (sw: utbildningsnämnd) and the Planning Committee (sw: läro- och timplanegruppen) for the Engineering Biology curriculum at Linköping University. I was member of the Education Board and the Planning Committee for the Mechanical Engineering curriculum at Linköping University and responsible for the Industrial Information Systems stream in this curriculum.

I was chair of the evaluation committee of the Applied Data Science program at Göteborgs universitet in 2021. I was evaluator of the thesis quality of the BSc program in Computer Science and Engineering at Örebro universitet in 2021.

Leadership at department level

I was the (first) director of undergraduate studies (sw: huvudstudierektor) at the Department of Computer and Information Science (IDA), Linköping University from 2002 to 2006. In this role I was the department's representative for undergraduate education in the technical faculty. Further, I led the group of undergraduate area managers for the different divisions, was responsible for department level undergraduate issues and for cooperation between the divisions regarding undergraduate issues. I also led the department's undergraduate teaching council (sw: grundutbildningsråd) which included the undergraduate area managers of the divisions, the department's faculty responsible for specializations in the different curricula and the department's representatives in the education boards for the different curricula. The group of area managers organized pedagogical days for the department. As one way to promote good quality education we founded an annual award for good achievements in undergraduate education. This award was presented during these pedagogical days. Another way I worked

on quality control was by discussing the courses in the different divisions with the area managers. I also sent letters to the staff of successful courses to congratulate them on their work.

I was the (first) undergraduate studies area manager (sw: studierektor) for the Database and Information Techniques division (ADIT) (1999-2006; 2011-2015; since end of 2016) and also for the Software and Systems division (2010-2012) at the Department of Computer and Information Science, Linköping University. In this role I was responsible for the well functioning of the undergraduate courses for which the division has the responsibility. This included planning of courses and proposing changes in the different curricula such as the development and removal of courses. It also included planning of staff resources as well as managing the financial resources, co-operation with other divisions and with education boards and a number of administrative tasks. I also took responsibility for the guidance of the teaching staff. There was also contact with students regarding such things as applications for courses and course evaluations. Regarding quality control I followed up on the mid-term evaluations and end-term evaluations of the courses. This included discussions with students, teachers and education boards. We maintained a good level of quality in our education which may be shown by the fact that the division's teacher group received the achievement of the year in undergraduate education award of the Department of Computer and Information Science, Linköping University, 2002.

I was the (first) Master and Bachelor thesis coordinator for the Department of Computer and Information Science at Linköping University from 1997 to 2002. One of the initial tasks that I performed was to evaluate the existing routines involving theses and modify these routines based on the evaluation. I also wrote a document with instructions for Master and Bachelor thesis work at our department. The routines and instructions were later used by another department and an education board as the basis for their routines. My work on daily basis as coordinator included such things as helping students find examiners, evaluating proposals for theses and maintaining contact with industry. I also worked for the foundation of an annual award for the best undergraduate thesis at the department. (The award was given the first time in 1998 for theses performed in 1997.) After the introduction of division level thesis coordinators, I have taken this role for the ADIT division.

In 2019 I became a member of the then newly formed working group for

undergraduate education at IDA. Since 2020 I am a member of the working group for doctoral education at IDA.

I chaired several working groups at IDA and LiU (e.g., preparation for implementation of Bologna agreement, programming languages in education, merging computer science educations CS and DAV) and was member of other groups (e.g., IDA Ladok 3 group).

Promoting good practice

As mentioned above, during my time as Master and Bachelor thesis coordinator, I founded a prize for best undergraduate thesis at the department in 1998, and as director of undergraduate studies, I founded an education award in 2002.

As part of reviving the promotion of good teaching practice at IDA, I proposed the introduction of teacher badges. The vice head of the department for education and the studies area managers introduced these teacher badges in 2025. The first batch of badges included Students' Hero, Students' Top 20, Take one for the Team, Architect, Climber, and Pay it Forward. (One of my courses received a Students' Top 20 recognition.)

As a student representative for education during my studies at KU Leuven, Belgium, I co-founded and coined the name 'Ticket naar 2e kan kwis' (Ticket to the second year quizz). This was an event where first-year students would practice examinations. The students would in groups of five solve exam questions in different courses which would be live graded by professors and TAs.