Annotated Bibliography
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Patrick Lambrix

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This document gives an overview of my research and publications. I have (had) a broad interest in computer science research and education and this is reflected in my publications. Most of my current work is on ontology engineering with focus on ontology development (introduction of Section 1), ontology alignment (Section 1.1) and ontology completion and debugging (Section 1.2). My aim is to develop methods based on a strong theoretical background that are then implemented in tools that can be used by knowledge engineers and domain experts in different fields such as materials science, life sciences and security. Further, I currently work on ontology-based database integration (Section 1.5) and sports analytics (Section 6).

1 Semantic Web, databases and ontologies

Researchers in various areas, e.g. medicine, agriculture and environmental sciences, use data sources and tools to answer different research questions or to solve various tasks, for instance, in drug discovery or in research on the influence of environmental factors on human health and diseases. Due to the recent explosion of the amount of on-line accessible data and tools, finding the relevant sources and retrieving the relevant information is not an easy task. Further, often information from different sources needs to be integrated. The vision of a Semantic Web [Lam14] alleviates these difficulties [Lam05]. A key technology for the Semantic Web are ontologies. Ontologies define the basic terms and relations comprising the vocabulary of a topic area, as well as the rules for combining terms and relations to define extensions to the vocabulary. They are used for communication between people and organizations by providing a common terminology over a domain. They provide the basis for interoperability between systems. They can be used for making the content in information sources explicit and serve as an index to a repository of information. Further, they can also be used as a basis for integration of information sources and as a query model for information sources. Ontologies are also the part of knowledge graphs that provide the schema/concept level and thus add structure to the data. An overview of the use of ontologies and ontology tools in bioinformatics and materials design can be found in the book chapters and articles [Lam04, LTJS07] and [LADL18, LADL22, Ghi23], respectively. The Semantic Web can be seen as an extension of the current Web in which information is given a well-defined meaning by annotating Web content with ontology terms.

We have looked at a number of issues in relation to the Semantic Web and developed tools, mainly within the BioTRIFU[1], SAMBO[2], KitAMO[3], KitEGA[4], RepOSE[5], AlignmentCubes[6], Phrase2Onto[7], and OBG-gen[8] projects.

Our tools have been **used in different domains** such as

- *materials science*: Data-driven computational materials design (DCMD, MD2) project at the Swedish e-Science Research Centre (SeRC)[9]: extension of NanoParticle Ontology and eNanoMapper [LAL19j], development of the Materials Design Ontology[10] (MDO) [LAL20, LALHAL24], development of a system for semantic and integrated access to materials databases [LHAL23, LALHAL24], development of an ontology for units of measures [ALLA24].
- *materials science*: additive manufacturing project: development of an ontology for powder bed fusion additive manufacturing processes [ATWLML24].
- *engineering*: development of an ontology for the semiconductor domain [LWL24].
- *animal health surveillance*: Animal Health Surveillance Ontology project: work on development of the Animal Health Surveillance Ontology[11] (AHSO) [DFHLLBR19];
- *toxicology*: alignment of ToxOntology and MeSH for the Swedish National Food Agency [ILHL12];

[1] http://www.ida.liu.se/~patla00/research/BioTRIFU/
[2] http://www.ida.liu.se/~patla00/research/SAMBO/
[3] http://www.ida.liu.se/~patla00/research/KitAMO/
[4] http://www.ida.liu.se/~patla00/research/KitEGA/
[5] http://www.ida.liu.se/~patla00/research/RepOSE/ and https://github.com/LiUSemWeb/RepOSE
[6] http://www.ida.liu.se/~patla00/research/AlignmentCubes/
[7] https://github.com/LiUSemWeb/phrase2onto
[8] https://github.com/LiUSemWeb/OBG-gen
[9] https://e-science.se/
[10] https://w3id.org/mdo/1.0/
[11] http://bioportal.bioontology.org/ontologies/AHSO

- *crime investigation*: for the EU FP7 project VALCRI (Visual analytics for sense-making in criminal intelligence analysis, winner of the 2022 Security Innovation Award - Commercialisation of the European Commission) and the H2020 EU project SPIRIT (Scalable privacy preserving intelligence analysis for resolving identities);
- *sports*: development of ontologies for ice hockey [KLCCL19] and badminton [LL24].
- *circular economy*: an overview of ontologies [LALLBL23] and development of ontologies [BLKLALL23] in the Horizon Europe EU project Onto-DESIDE [BLBLD22].

Some of our work in this area was part of the EU Network of Excellence REWERSE (REasoning on the WEb with Rules and SEmantics) and in particular of the working group on a Semantic Web for bioinformatics (e.g. [Ba04, REWERSE-A2-D1, REWERSE-A2-D2, REWERSE-A2-D3, REWERSE-A2-D4]). Most of our recent work has been in the area of ontology engineering where we focused on ontology alignment[12], ontology completion[13], ontology debugging and ontology evolution.

Although ontology alignment, ontology completion, and ontology debugging have been studied in separate sub-fields of ontology engineering, I proposed an abductive framework for completion and debugging of ontologies and ontology networks in [Lam23] that covers these areas. Using the framework the state-of-the-art approaches are compared and challenges for future work are proposed.

1.1 Ontology alignment and merging

Within the SAMBO (*S*ystem for *A*ligning and *M*erging *B*iomedical *O*ntologies) project we have developed a **framework** for aligning and merging ontologies based on the computation of similarity values between terms in the source ontologies [LT05b]. Most current alignment systems can be seen as instances of our framework. We also showed how the framework can be used to experiment with different alignment strategies and their combinations. This is a first step towards defining a framework that can be used for comparative evaluations of alignment strategies. Further, we developed an alignment and merging **system**, SAMBO, based on this framework [LEMT03, LT05a, LT05b, LT06a, TJLAS06, WTWLS06, LTX08]. SAMBO

[12] An overview of our work until 2012 is given in [LK12].
[13] An overview of our work until 2012 is given in [LID12].

uses linguistic strategies, structure-based strategies, strategies based on auxiliary knowledge and learning-based strategies. We have also evaluated existing tools (for ontology development [LHP03] and ontology alignment and merging [LE03, LT05a, LT06a]) for their use in bioinformatics as well as different strategies for alignment with a focus on biomedical ontologies. The evaluations in [LHP03, LE03] are to our knowledge the first evaluations of ontology tools using bio-ontologies. These evaluations were also among the largest evaluations of ontology tools (see survey in [KW04]). In these evaluations SAMBO showed good results regarding the quality of the alignment and often allowed the task to be performed faster than the other tools. In 2007 and 2008 we participated in the Ontology Alignment Evaluation Initiative (OAEI[14]) where we focused on the anatomy task. SAMBO performed well in 2007 and won the track in 2008. SAMBO's successor, SAMBOdtf, obtained second place in 2008 [TL07b, LTL08, LLT09d]. SAMBO was also discussed as one of the main ontology alignment systems in [SE13].

Based on our experience using and evaluating SAMBO, we developed a framework for **evaluating ontology alignment strategies** and their combinations [LT07a]. We also implemented a tool, KitAMO (Tool*Kit* for *A*ligning and *M*erging *O*ntologies), that is based on the framework and supports the study, evaluation and comparison of alignment strategies and their combinations based on their performance and the quality of their alignments on test cases. It also provides support for the analysis of the evaluation results. An overview of SAMBO and KitAMO is presented in [LT08]. In [IBPL17a, IBPL17b] we developed AlignmentCubes, an interactive environment for exploring and visualizing multiple alignments. One of the use cases is evaluation of ontology alignment strategies. The techniques are complementary to those of KitAMO. Alignment Cubes has been made availabe to the organizers of the OAEI and was integrated in the MELT (Matching EvaLuation Toolkit) framework of the University of Mannheim.

We investigated several **techniques and methods** for ontology alignment. In [CTL06] we proposed a novel filtering mechanism to improve the alignment results of the strategies.

We investigated whether the use of partial reference alignments , i.e. part of the solution is given, could improve the results of alignment systems. Our study [LL09] was the first in its kind.

Further, we have developed a method that provides recommendations on alignment strategies for a given alignment problem. The method is based on the evaluation of the different available alignment strategies on several

[14] `http://oaei.ontologymatching.org/`

small selected pieces from the ontologies, and uses the evaluation results to provide recommendations. In [TL07a] we give the basic steps of the method, and then illustrate and discuss the method in the setting of an alignment problem with two well-known biomedical ontologies.

In [CDCL15] we investigated the use of clustering techniques to reduce the search space for ontology alignment algorithms.

In [Lam11, LK13, LK17] we introduced a framework for **session-based ontology alignment**. In contrast to the case of small ontologies, for large ontologies the computation of mapping suggestions can take a long time and therefore, we would like to be able to start the validation before every mapping suggestion is computed. Further, it is clear that for large ontologies, in general, there are too many mapping suggestions to validate in one time. Therefore, we want a system that allows to partially validate the mapping suggestions and resume the validation later. However, whenever validation decisions have been made, they increase our knowledge about the ontologies and mappings and this knowledge can be used to provide better mapping suggestions. The proposed framework deals with this by introducing computation, validation and recommendation sessions. A session-based version of SAMBO was implemented that incorporated much of our earlier work.

In [IL14, ILA15] we proposed requirements for **user support** for large-scale ontology alignment and presented a literature study as well as an evaluation of the user interfaces of state-of-the-art systems with respect to these requirements. In [DILFJP16] we focused on system requirements for supporting the user validation step. The requirements were updated and a larger literature study and experiments covering several years of the OAEI Interactive track were presented in [LDFIJLP19]. A proposal for reporting on empirical studies in the Semantic Web is presented in [PILL18] and was used as a major inspiration for guidelines for the ISWC[15] reproducibility track[16] which started in 2020.

Since 2013, our group organizes tracks of the **Ontology Alignment Evaluation Initiative (OAEI)** ([OAEI13, OAEI14, OAEI15, OAEI16, OAEI17, OAEI17.5, OAEI18, OAEI19, OAEI20, OAEI21, OAEI22, OAEI23] and [DILL17]). Since 2018 I am a steering committee member of the OAEI.

[15] International Semantic Web Conference, the main conference in the Semantic Web area.

[16] https://repro.semanticweb.org/ISWC2020/replicability-assessment-guide/

1.2 Ontology completion and debugging

Developing ontologies is not an easy task and often the resulting ontologies are not consistent nor complete. Such ontologies, although often useful, lead to problems when used in semantically-enabled applications. Wrong conclusions may be derived or valid conclusions may be missed. To deal with this problem we may want to repair the ontologies.

In [LLT09a, LLT09b, LLT09c] we presented a method and system for completing given missing is-a structure of taxonomies. This study was the first in its kind. In [LiL10a, LiL10b] the methods were extended for networked taxonomies. Further, in [LL11a, LL11b] we proposed an approach to deal with both missing and wrong is-a relations in networked taxonomies. In [IL12] we presented a system for debugging and completing dealing with missing and wrong is-a relations as well as missing and wrong mappings for networked taxonomies and it was used for debugging and completing a taxonomy for the Swedish National Food Agency [ILHL12]. This was extended to also deal with missing and wrong mappings [LI13]. We further extended this work to deal with ontologies represented in more expressive knowledge representation languages: the $\mathcal{EL}$ family [DLW14a, DLW14b, WDL14, LWD15] and $\mathcal{ALC}$ [LDI12]. In [DLL21] we described a plugin for Protégé that helps users to add new concepts to an ontology and introduces a completion step in that stage. The plugin is based on the algorithm for $\mathcal{EL}$ explained in [LWD15]. In [LWDI13] we formalized the repairing of missing is-a relations as a new kind of abduction problem.

Further, we integrated ontology alignment and ontology completion and debugging for taxonomies in [IL13a, IL13b, IL13c]. In [DLB15] we showed the advantages of integrating ontology debugging, completion and alignment into an ontology development methodology.

In [LL21, LL23a] we developed a framework for removing wrong axioms and mitigating the effect of thereby also removing correct knowledge by weakening and completing. We showed that there exist different ways of combining these operations and showed that current work only considered one of many possible combinations. A system based on the framework was presented in [LL23b]. The framework was extended to include full debugging in [LL23c, LL24a]. Further, we showed a variant of the framework for ontology networks in [LL23d, LL24a] where we defined autonomy levels representing cooperation strategies/policies between owners of ontologies or alignments in the network.

In [LAL19, LAL19j] we developed a method for extending ontologies using topic models and formal topical concept analysis and showed an application to the nanotechnology domain. The method was used in [ALAL21a] to extend the materials design ontology proposed in [LAL20]. A tool for extending ontologies based on this method is described in [ALAL21b, ALAL23].

In 2012 we founded the International Workshop on Debugging Ontologies and Ontology Mappings - WoDOOM series and we co-chaired the three editions [LQH12, LQHP13, LQHP14]. The scope was extended in 2016 - International Workshop on Completing and Debugging the Semantic Web - CoDeS and we co-chaired that edition [PLSKHLP16].

1.3 Ontology evolution

In [LDIA16] we proposed requirements for user support and visualization for ontology evolution and presented a literature study as well as an evaluation of the user interfaces of state-of-the-art systems with respect to these requirements.

1.4 Literature search

Success in the life sciences depends on access to information in knowledge bases and literature. Finding and extracting the relevant information depends on a user's domain knowledge and the knowledge of the search technology. In [BLLKA09] we presented a system that helps users formulate queries and search the scientific literature. The system coordinates ontologies, knowledge representation, text mining and NLP techniques to generate relevant queries in response to keyword input from the user. Queries are presented in natural language, translated to formal query syntax and issued to a knowledge base of scientific literature, documents or aligned document segments.

1.5 Integration of data sources

In the BioTRIFU (*Bio*- *T*he *R*ight *I*nformation *F*or yo*U*) project we tackled the problem of integrating biological data sources. We studied existing biological data sources regarding their content, data quality, updates, consistency, data models, semantic heterogeneity, and access and retrieval methods. Based on this we defined requirements for information integration systems in this area and discussed how existing systems conform to these requirements. We also developed the BioTRIFU system that addresses some of these requirements. In [LJ03] we proposed a base query language that contains operators that should be present in any query language for biological data sources and presented an architecture for a system supporting such a language. A first prototype was implemented [Jak05]. Further, we investigated the use of ontological information in data source integration. In [JL05] we identified the kinds of ontological knowledge that are publicly available in the field of bioinformatics and showed how these can be used for data source integration. The latter has been part of a tutorial at the 2006 Reasoning Web summer school [DJLSW06]. Some of the issues in information integration in the life sciences are also described in [LS07a] and the book chapter [LST09].

Since the early 2000s materials science has shifted towards its fourth paradigm, data-driven science. As data-driven techniques become widely used, big data challenges regarding volume, variety, variability and veracity and challenges in reproducing, sharing, and integrating data are growing at the same time. For instance, much interoperability software presently employs only syntactic interoperability in their linking software, which requires in-depth knowledge of the data content/format, severely limiting the reuse of software and data, especially outside the application domain. These problems relate to the FAIR principles introduced in 2016 which state that data should be Findable, Accessible, Interoperable, and Reusable, respectively (see, e.g. [LADL22]). In different areas research is on the way to conform data management to these principles, including in the materials science domain. One of the recognized enablers for the principles are ontologies and ontology-based techniques. In this area we work together with the OPTIMADE[17] consortium that contains major materials database providers to introduce semantic and integrated access to materials databases. We use an ontology-based access approach where the ontology provides semantics as well as a global model for the integration. The vision of this approach is presented in [LAL20]. One of the necessary components in the approach is an ontology representing the domain knowledge in the materials databases regarding calculations. Therefore, we developed the Materials Design Ontology [LAL20, LALHAL24]. First results regarding extending this ontology using the approach in [LAL19j] are presented in [ALAL21a, LALHAL24]. Further, the approach was implemented in a proof-of-concept system using an RDF triple store (shown in [LAL20]) and another kind of implementation based on GraphQL [LALHAL24, LHAL23].

[17] https://www.optimade.org/

1.6 Representation and storage of biomedical data

In [SL05a, SL05b] we compared three proposed standards (SBML, PSI MI, BioPAX) and evaluated them with respect to their underlying models, information content and possibility for easy creation of tools. This evaluation was updated in [SJTL06] and extended towards other standards in [SHL07].

In [FSKL12] we evaluated the performance of XML databases for epidemiological queries in archetype-based electronic health records and in [FTWSKL16, SWFL17] we compared the performance for NoSQL approaches.

1.7 Similarity-based grouping of biological data

Similarity-based grouping of data entries in one or more data sources is a task underlying many different data management tasks, such as, structuring search results, removal of redundancy in databases and data integration. In [JRL06] we proposed a method for similarity-based grouping and show results from test cases. The main steps of the method are specification of grouping rules, pairwise grouping between entries, actual grouping of similar entries, and evaluation and analysis of the results. In [JL07] we presented a framework for evaluating similarity-based grouping strategies and an implemented tool, KitEGA (Tool*Kit* for *E*valuation *G*rouping *A*lgorithms), based on the framework. Users can plug in different data sources, grouping methods and classifications and the system supports the user in running the algorithms, and summarizing, analyzing and comparing the results.

2 Semantic Web and Workflows/Processes

The Semantic Web enables business-to-business in new ways. In this context, organizations need to make use of the new opportunities that the Semantic Web technology provides. However, this should be done without major requirements on the organization. To this aim we proposed in [ALS05] an agent-based model for integrating the usage of the Semantic Web (represented as Web services) into an organization's work routines (represented by Workflows). Further, we described a possible architecture for our approach, and briefly showed its feasibility with an implemented prototype. In [ALTS05] we described the central component of the model, sButler, which is a software agent that mediates between the organization and the Semantic Web. In [AALS06] we described a platform to evaluate service discovery technology (such as the sButler) in the Semantic Web.

In [ATWLML24] we developed an ontology for processes in additive maufacturing.

3 Knowledge-Based Information Retrieval

Much information is stored electronically in document bases. Users retrieve information from these document bases by browsing and querying. While a large number of tools are available, not much work was done on tools that support queries involving all the characteristics of documents as well as the use of domain knowledge during the search for information. As part of our TRIFU (The Right Information For yoU) project we proposed a model for such a system [LS98, LS00]. We proposed a query language that allows for querying documents using content information, information about the logical structure of the documents as well as information about properties of the documents. Domain knowledge is taken into account during the search as well [LSJ99, LS00]. We also presented an architecture for a system supporting such a language and implemented a prototype [LS98, LS00]. In [LSÅ97] we concentrated on the structural information in the knowledge base and showed how the structural information of HTML documents can be extracted and represented automatically in a description logic for composite objects as defined in [Lam96, LP97]. This description logic was then used as internal representation language for the prototype.

4 Knowledge Representation

Most of my work in the area of knowledge representation has been concentrated in the field of description logics. Description logics are languages tailored for expressing knowledge about concepts and concept hierarchies representing the is-a relation. They are seen as core technology for the Semantic Web and are the basis for languages such as DAML+OIL and OWL. However, it is agreed upon that for many applications more complex additions such as temporal information and reasoning about the part-of relation, are needed. Further, given the fact that description logics present a clean object-centered model with a good understanding of the issues regarding types and classification, description logics provide a framework to investigate the issues which appear when we try to integrate classification and other kinds of reasoning.

4.1 Description Logics and Part-Of

In our largest project regarding description logics we extended description logics with part-of reasoning guided by applications. One of the first papers that was published in the area on work on part-of in combination with description logics was our paper [PL94]. In this paper we defined a simple description logic for composite objects and a specialized inference that allows for building new composite objects from already existing objects. The description logic allowed for representation of different kinds of part-whole relations, number and domain restrictions for part-whole relations and constraints between parts. A description logic system for composite objects was implemented, based on the CLASSIC description logic system. The framework was extended in [LP95a, LP95b] to deal with order information between parts and a restricted form of inheritance via part-of. Further, we defined a new inference that allows for finding out what is still missing, given a number of parts, to build an object of a particular kind. These extensions were motivated by a document management application [LP00]. In [LP96a, LP97] we used a description logic for composite objects to extend the description logic model for information retrieval. In our new model we can represent and query documents with respect to their contents as well as their structure. Another application is described in [LP96b, LP98] where we re-model the reaction control system of the space shuttle. We base our model on an existing implementation for which the domain knowledge base contains much hard-coded as well as implicit information about part-of and show the advantages of our model. In [LM96] we used our description logic for composite objects to learn composite concepts. This work was extended and generalized in [LL98].

The work described above is included and some of it extended in my Ph.D. thesis [Lam96]. An extension of the work in the Ph.D. thesis together with some of the work on knowledge-based information retrieval is included in the book [Lam00].

In an overview article about part-of in object-centered systems [Ar*96] our approach is discussed as one of the main approaches in the area. Our framework has also been used by other researchers, e.g. in the CODY project at the University of Bielefeld as a basis for representation and reasoning in mechanical-object assembly tasks [CJW95, WJ96], and the High Performance Knowledge Bases project[18].

[18] Personal communication, 2000.

4.2 Description Logics and Time

Another interesting extension to description logics is the addition of temporal information. In [LR93] we defined a temporal description logic, T-LITE, which allows for representation of temporal concepts in two senses. First, objects can belong to a concept at one time and not at another time. Thus the extension of the concept is time-dependent. Further, we allow for concepts to be defined in terms of the development of objects.

4.3 Description Logics and Default Reasoning

In our lab much work has been done on extending description logics with default reasoning. In this area I have been advisor for Niclas Wahllöf. In his Licentiate thesis [Wah96] he describes a default extension to description logics that allows for computing whether it is plausible for an object to belong to a certain concept. He demonstrates the usefulness of his approach in a configuration application. The approach is also used in an application for search on the world-wide web [Wah96, LSW97, LSW98].

4.4 Temporal Reasoning for Traffic Accident Modeling

In [CSL04] we presented a temporal reasoning system for modeling and analyzing various types of traffic scenarios. The system is based on the event calculus. In the paper we described the system and provide a case study where we describe and analyze a rear-end accident scenario with and without communicating vehicles.

5 Agent Theory

Intentional agent systems are increasingly being used in a wide range of complex applications. Capabilities has been introduced into one of these systems as a software engineering mechanism to support modularity and reusability while still allowing meta-level reasoning. The paper [PL00] presented a formalization of capabilities within the framework of beliefs, goals and intentions (BDI) and indicates how capabilities can affect agent reasoning about its intentions. We defined a style of agent commitment which we refer to as a self-aware agent which allows an agent to modify its goals and intentions as its capabilities change. We also indicated which aspects of the specification of a BDI interpreter are affected by the introduction of capabilities and gave some indications of additional reasoning which could be incorporated into an agent system on the basis of both the theoretical analysis and the existing implementation. This work was extended in [PL05] where we defined different possible formalisations of capabilities within the framework of beliefs, goals and intentions. We defined an extension as well as an alternative for the framework in [PL00] and showed the consequences regarding agent commitment and BDI interpreter.

6 Sports Analytics

Sports analytics deals with using data related to sports events to obtain insights about the sport and its surroundings.

One of the important topics in sport analytics is the valuation of player performance. In [NLC18] we compared and contrasted which attributes and skills best predict the success of individual players in their positions in five European top football leagues. Further, we evaluated different machine learning algorithms regarding prediction performance. A similar study regarding ice hockey and several NHL seasons is presented in [LKCL20]. In [SNLCL24] we performed an investigation on the peak age of soccer players in Sweden. For this we needed to define new performance metrics. In [SCL19] we extended earlier work for evaluating the performance of players in ice hockey and showed relationships with traditional performance measures and salary. In [LCL18] we extended this work to the related problem of evaluating the performance of player pairs. We experimented with data from seven NHL seasons, discuss the top pairs, and present analyses and insights. New goal-based performance measures for ice hockey based on the fact that not all goals are equally important for winning a game are presented in [VSJCL21, LC22, SCL23a, LCS24]. In [SSCL23] we investigated the importance of special teams in ice hockey. In [SCL23b] we identified different player roles for ice hockey and compared player salaries and investigated in team composition. In [ORWCL24] we identified player styles for ice hockey.

Predicting game or season outcomes is important for clubs as well as for the betting industry. Understanding the critical factors of winning games and championships gives clubs a competitive advantage when selecting players for the team and implementing winning strategies. In [GWCL21] we tackled this problem for basketball. We worked with NBA data from 10 seasons and showed that our approach has a similar performance as the odds from betting companies and does better than ELO.

In [LJCL19] we presented the implementation and evaluation of an imitation learning method using recurrent neural networks, which allows us to learn individual player behaviors and perform rollouts of player movements on previously unseen play sequences. The method was evaluated using a 2019 dataset from the top-tier soccer league in Sweden (Allsvenskan).

In [KLCCL19] we developed an ontology for ice hockey and in [LL24] for badminton.

7 Computer Science Education

Yearly, our group teaches basic database courses to about two to four hundred engineering students with different backgrounds and different requirements. We also have a limited amount of teacher resources. To deal with this situation we have organized our course topics in the form of modules. A database course is then defined by a number of modules together with a mini-project. In [LS07b] we discussed this organization and give an evaluation.

In [LK98] we described a view of teaching where computer science is integrated with a number of other areas. This view is used in the Information Technology curriculum at Linköping University. The teaching philosophy in this curriculum is problem-based learning. We describe a particular term in the curriculum as an example of the approach and the integration of computer science teaching with teaching of other disciplines. In [LGK97] we described a particular theme in the term in more detail.

Within the same curriculum a term has been developed where the civil engineering students work and study together with students from the psychology and economics education programs. The aim of the term is to give the students experience in cooperation with project group members, clients and experts from other professions. The information technology and economics students build companies together and perform a project. The psychology students act as consultants for the different companies. The project includes the design and building of a mobile robot, an analysis of the necessary calculations for the control of a robot arm, the development and implementation of a prototype of a stock administration program, as well as an economic analysis of the system and a market analysis with respect to their product. Subjects from six departments are integrated in the project. We followed the term during development, running, evaluation and updating as part of the NyIng project. NyIng (Förnyelse av ingenjörs- och civilingenjörsutbildningarna) was a project under the auspices of the Swedish government with as goal to evaluate the engineering education in

Sweden and suggest ways to improve this education. Our observations are described in [Lam98, LO99a].

In [SÅL00] we described a specialization in media technology where both subject learning and personal development are in focus. We illustrated the teaching methodology with a course where projects are used to obtain the subject learning and personal development goals. A key factor in the approach is student responsibility.

[HLTK01] described a mid-term evaluation method based on 'Muddy Cards' that allows us to obtain comments about courses during the running of the courses. The main advantage is that there is still time to make changes to the courses that affect the students who participated in the evaluation. Another advantage is that when changes cannot be made, there is a chance to inform the students about the reasons.

In [FHLMW15, FHLMW16] we described the introduction of an e-learning tool (OpenDSA) in a data structures and algorithms course. OpenDSA provides textbook quality text with links to a dictionary of important terms. It provides many code examples and step-by-step algorithm visualizations. Understanding of algorithms is supported by simulation exercises for the algorithms. After each section and each chapter, there are quizzes with multiple choice questions related to the main concepts of the section or chapter. Common to all examples, exercises and quizzes is that they are randomly generated instances of examples and exercises, thereby providing for a multitude of practise possibilities. As a help for doing the exercises and quizzes, students can obtain hints, and automated and immediate feedback is given. Further, OpenDSA automatically stores extensive log data about the interaction with the system. We analyzed the log data, used questionnaires and performed observation studies to investigate the influence of using this tool on student learning and attidutes.

8 Object-Centered Databases

The work in this area was part of the LINCKS project. LINCKS is an object-centered multi-user database system developed for complex information system applications where editing and browsing of information in the database is of paramount importance. Some of the interesting features of LINCKS are multiple users, a hypertext interface, support for composite objects, temporal information, alternative views of data, information sharing and parallel editing notification.

8.1 Version Management of Composite Objects

In [Lam92a] we defined two different kinds of composite objects. On one hand we have composite objects such as folders, where the composite object is considered to have changed only if things are added or removed from the composition. On the other hand we have composite objects such as documents where the composition itself (the document) is considered to have changed whenever one of its parts (e.g. a paragraph) changes internally. We described the relations connecting such compositions in the temporal logic LITE and developed synchronization rules which we have proved are capable of maintaining the desired relations as parts of the database change over time. The rules have been implemented in LINCKS.

In [Lam92b, Lam92c] we proposed a mechanism for version management of composite objects based on time slices. To maintain a consistent history of a composition, we maintain for the time slices information about which version of the composition root existed, what the hierarchical structure was together with information about the objects participating as components, information about the kind of binding between composition and component (static or dynamic) and for the dynamically bound components, which version existed. The update approach we implemented is a form of screening, i.e. a delayed update on need or demand.

The work found in [Lam92a, Lam92b, Lam92c] has been extended in my Licentiate thesis [Lam92d]. The work in [Lam92a] is also extended in [Lam97] where we discuss temporal properties of parts and wholes with respect to different categories of part-whole relations.

8.2 Combining Description Logics and Object-Centered Database Systems

Description logic systems are object-centered knowledge representation systems. The functionality provided by these systems is often complementary to the functionality provided by object-oriented database management systems. In [PLK95] we reported on combining the object-centered database system LINCKS with the description logic system CLASSIC.

9 Security

Key management schemes for multicast in 2003 provided either no resistance to collusion or perfect resistance to collusion. The resistance to collusion was achieved at the expense of efficiency in terms of the number of transmissions and the number of keys that are used. In [DSL03b] we introduced a hybrid key scheme that allows to balance resistance to collusion against efficiency. The resistance to collusion is defined by the number of multicast group members that maximally are allowed to collude. In [DSL03a] we argued that applications may have certain assumptions regarding the users and their access to the multicast channel that may be used to provide a larger choice for balancing efficiency against resistance to collusion. Starting from a user categorization, based on the accessibility to the multicast channel, we formalized the collusion requirement. Different user categorizations give different degrees of collusion resistance and we showed that the existing work has focused on special cases of user categorizations. Further, we proposed and evaluated a flexible key management strategy for the general case where the accessibility relation defines the order of exclusion of the categories. The theoretical and experimental results showed that our scheme has good performance regarding transmissions and keys per controller. A more efficient variant of the scheme regarding keys per user is found in [DSL04].

10 Debugging of Real-Time Systems

The work done in this area was part of the DARTS project (Debug Assistant for Real-Time Systems). The debug assistant is designed for real-time systems which are developed in a host-target environment. The host system is a Unix workstation and the targets are single-board computers on a VMEbus. The workstation and the targets are connected via ethernet.

The debugging is a two phase process. During the first phase the target system is monitored and the execution history of the system is recorded. The second phase includes the actual debugging. The papers [TGL93a, TGL93b] described mainly this second phase. One part of the debugging tool is a visualizer which allows a user to visualize the system activities in a suspicious region. This region is identified by the other component of the system. This other component is a source code analyzer which matches trace data to source code and saves the result in a Prolog database. This database can then be queried to find the time window where the faulty behavior occurs.

11 Combining Learning and Planning

In my computer science undergraduate thesis [Lam90] we studied the combination of the concept learning system CLINT and a planner to learn preconditions of actions. This project was a first step in using CLINT as part of an autonomous agent [DeR91, DeR92]. In this project we assumed that the agent has a set of incompletely specified actions in the sense that the preconditions of the actions known to the agent may be incompletely or incorrectly specified. However, the agent does know what the result of his actions should be and decides using that knowledge when actions go wrong. Whenever an opportunity occurs the agent tries to learn a better specification of the preconditions of the actions.

12 Conference and Workshop Proceedings, Organization of Initiatives and Special issues

VOILA. The International Workshop on Visualizations and User Interfaces for Ontologies and Linked Data (2015) was organized by Valentina Ivanova, Patrick Lambrix, Steffen Lohman and Catia Pesquita in Bethlehem, PA, USA [ILLP15]. The 2nd International Workshop on Visualization and Interaction for Ontologies and Linked Data (2016) was organized by Valentina Ivanova, Patrick Lambrix, Steffen Lohman and Catia Pesquita in Kobe, Japan [ILLP16]. The 3rd International Workshop on Visualization and Interaction for Ontologies and Linked Data (2017) was organized by Valentina Ivanova, Patrick Lambrix, Steffen Lohman and Catia Pesquita in Vienna, Austria [ILLP17]. The 4th International Workshop on Visualization and Interaction for Ontologies and Linked Data (2018) was organized by Valentina Ivanova, Patrick Lambrix, Steffen Lohman and Catia Pesquita in Monterey, CA, USA [ILLP18]. The 5th International Workshop on Visualization and Interaction for Ontologies and Linked Data (2020) was organized by Valentina Ivanova, Patrick Lambrix, Catia Pesquita and Vitalis Wiens virtually, originally planned in Athens, Greece [ILPW20]. The 6th International Workshop on Visualization and Interaction for Ontologies and Linked Data (2021) was organized by Patrick Lambrix, Catia Pesquita and Vitalis Wiens virtually [LPW21]. The 7th International Workshop on Visualization and Interaction for Ontologies and Linked Data (2022) was organized by Bo Fu, Patrick Lambrix and Catia Pesquita virtually/Hangzhou, China [FLP22]. The 8th International Workshop on Visualization and Interaction for Ontologies, Linked Data and Knowledge Graphs (2023) was organized by Bo Fu, Patrick Lambrix, Huanyu Li, Susana Nunes and Catia Pesquita in Athens, Greece [FLLNP23]. The 9th International Workshop on Visualization and Interaction for Ontologies, Linked Data and Knowledge Graphs (2024) was organized by Bo Fu, Patrick Lambrix, Huanyu Li, Susana Nunes and Catia Pesquita in Baltimore, MD, USA [FLLNP24].

A special issue for the Journal of Web Semantics on visualization and interaction for ontologies and linked data was organized by Valentina Ivanova, Patrick Lambrix, Steffen Lohman and Catia Pesquita and published in 2018-2019 [ILLP19si]. A special issue for the Semantic Web Journal on interactive semantic web was organized by Bo Fu, Patrick Lambrix and Catia Pesquita and published in 2024 [FLP24].

LINHAC. The first ice hockey analytics conference in Europe and largest in the world was organized as Linköping Hockey Analytics Conference in 2022 by Patrick Lambrix, Niklas Carlsson, and Mikael Vernblom in Linköping [LCV22a, LCV22b]. The second Linköping Hockey Analytics Conference was organized by Patrick Lambrix, Mikael Vernblom, Niklas Carlsson, and Tim Brecht [LVCB23, BCVL23]. The third Linköping Hockey Analytics Conference was organized by Patrick Lambrix, Mikael Vernblom, Niklas Carlsson, and Tim Brecht [LVCB24, BCVL24].

SeMatS. The 1st International Workshop on Semantic Materials Science (2024) was organized by Andre Valdestilhas, Huanyu Li, Patrick Lambrix, and Harald Sack in Amsterdam, The Netherlands [VLLS24].

EKAW. The 19th International Conference on Knowledge Engineering and Knowledge Management (2014) was organized by general chairs Patrick Lambrix and Eero Hyvönen in Linköping, Sweden [JSLH14, LHBPQSDG15].

WoDOOM/CoDeS. The 1st International Workshop on Debugging Ontologies and Ontology Mappings (2012) was organized by Patrick Lambrix, Guilin Qi, and Matthew Horridge in Galway, Ireland [LQH12]. The 2nd International Workshop on Debugging Ontologies and Ontology Mappings (2013) was organized by Patrick Lambrix, Guilin Qi, Matthew Horridge, and Bijan Parsia in Montpellier, France [LQHP13]. The 3rd International Workshop on Debugging Ontologies and Ontology Mappings (2014) was organized by Patrick Lambrix, Guilin Qi, Matthew Horridge, and Bijan Parsia in Anissaras/Hersonissou, Greece [LQHP14]. CoDeS is a broadening of the WoDOOM series. The 1st International Workshop on Completing and Debugging the Semantic Web (2016) was organized by Matthew Horridge, Patrick Lambrix, Bijan Parsia, and Heiko Paulheim in Heraklion, Greece [PLSKHLP16].

DILS. The 17th International Conference on Data Integration in the Life Sciences (2010) was organized by Patrick Lambrix and Graham Kemp in Göteborg, Sweden [LK10, KL10].

DL. The International Workshop on Description Logics (1999) was organized by Patrick Lambrix, Alex Borgida, Maurizio Lenzerini, Ralf Möller, and Peter Patel-Schneider in Linköping, Sweden [LBLMP99].

OAEI. Our group organizes the Anatomy track (since 2013) and coorganizes the Interactive track (since 2015) and the Circular Economy track (since 2024) of the Ontology Alignment Evaluation Initiative. [OAEI13, OAEI14, OAEI15, OAEI16, OAEI17, OAEI17.5, OAEI18, OAEI19, OAEI20, OAEI21, OAEI22, OAEI23] are summary papers for the different years of the OAEI. [DILL17] is an experience paper regarding the OAEI tracks using the Anatomy data set during 2007-2016.

References

[Books - monograph]

[Lam00] Lambrix P, *Part-Whole Reasoning in an Object-Centered Framework*, Lecture Notes in Artificial Intelligence 1771, Springer Verlag, 2000. ISBN 3-540-67225-7.
`https://doi.org/10.1007/3-540-46440-9`

[Books - edited]

[LVCB24] Lambrix P, Vernblom M, Carlsson N, Brecht T, (eds), *Linköping Hockey Analytics Conference LINHAC 2024*.

[LVCB23] Lambrix P, Vernblom M, Carlsson N, Brecht T, (eds), *Linköping Hockey Analytics Conference LINHAC 2023*.

[LCV22a] Lambrix P, Carlsson N, Vernblom M, (eds), *Linköping Hockey Analytics Conference LINHAC 2022*.

[Lam12] Lambrix P (ed), *Advances in Secure and Networked Information Systems - The ADIT Perspective*, LiU-Tryck/LiU Electronic Press, 2012. Festschrift in honor of professor Nahid Shahmehri. ISBN for printed version: 978-91-7519-717-3, ISBN for electronic version: 978-91-7519-716-6.
`http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-85899`

[Proceedings - edited]

[BCVL24] Brecht T, Carlsson N, Vernblom M, Lambrix P, (eds), *Proceedings of the Linköping Hockey Analytics Conference LINHAC 2024 Research Track*, (Linköping, Sweden), LECP 209, 2024. ISBN 978-91-8075-710-2.
`https://doi.org/10.3384/ecp209`.

[FLLNP24] Fu B, Lambrix P, Li H, Nunes S, Pesquita C, (eds), *Proceedings of the 9th International Workshop on Visualization and Interaction for Ontologies, Linked Data and Knowledge Graphs*, CEUR Workshop Proceedings Volume 3773, (Baltimore, MD, USA), 2024.
`http://ceur-ws.org/Vol-3773`

[VLLS24] Valdestilhas A, Li H, Lambrix P, Sack H, (eds), *Proceedings of the First International Workshop on Semantic Materials Science: Harnessing the Power of Semantic Web Technologies in Materials Science*, (Amsterdam, The Netherlands), CEUR Workshop Proceedings 3760, 2024.
`https://ceur-ws.org/Vol-3760/`

[BCVL23] Brecht T, Carlsson N, Vernblom M, Lambrix P, (eds), *Proceedings of the Linköping Hockey Analytics Conference LINHAC 2023 Research Track*, (Linköping, Sweden), LECP 201, 2023. ISBN 978-91-8075-357-9.
`https://doi.org/10.3384/ecp201`.

[FLLNP23] Fu B, Lambrix P, Li H, Nunes S, Pesquita C, (eds), *Proceedings of the 8th International Workshop on Visualization and Interaction for Ontologies, Linked Data and Knowledge Graphs*, CEUR Workshop Proceedings Volume 3508, (Athens, Greece), 2023.
`http://ceur-ws.org/Vol-3508/`

[FLP22] Fu B, Lambrix P, Pesquita C, (eds), *Proceedings of the Seventh International Workshop on Visualization and Interaction for Ontologies and Linked Data*, (Virtual Conference), CEUR Workshop Proceedings Volume 3253, 2022.
`http://ceur-ws.org/Vol-3253`

[LCV22b] Lambrix P, Carlsson N, Vernblom M, (eds), *Proceedings of the Linköping Hockey Analytics Conference LINHAC 2022 Research Track*, (Linköping, Sweden), LECP 191, 2022.
`https://doi.org/10.3384/ecp191`

[LPW21] Lambrix P, Pesquita C, Wiens V, (eds), *Proceedings of the 6th International Workshop on Visualization and Interaction for Ontologies and Linked Data*, (Virtual Conference), CEUR Workshop Proceedings Volume 3023, 2021.
`http://ceur-ws.org/Vol-3023/`

[ILPW20] Ivanova V, Lambrix P, Pesquita C, Wiens V., (eds), *Proceedings of the 5th International Workshop on Visualization and Interaction for Ontologies and Linked Data*, (Virtual Conference, originally planned in Athens, Greece), CEUR Workshop Proceedings Volume 2778, 2020.
`http://ceur-ws.org/Vol-2778/`

[ILLP18] Ivanova V, Lambrix P, Lohmann S, Pesquita C, (eds), *Proceedings of the 4th International Workshop on Visualization and Interaction for Ontologies and Linked Data*, (Monterey, CA, USA), CEUR Workshop Proceedings Volume 2187, 2018.
http://ceur-ws.org/Vol-2187/

[ILLP17] Ivanova V, Lambrix P, Lohmann S, Pesquita C, (eds), *Proceedings of the 3rd International Workshop on Visualization and Interaction for Ontologies and Linked Data*, (Vienna, Austria), CEUR Workshop Proceedings Volume 1947, 2017.
http://ceur-ws.org/Vol-1947

[ILLP16] Ivanova V, Lambrix P, Lohmann S, Pesquita C, (eds), *Proceedings of the 2nd International Workshop on Visualization and Interaction for Ontologies and Linked Data*, (Kobe, Japan), CEUR Workshop Proceedings Volume 1704, 2016.
http://ceur-ws.org/Vol-1704

[PLSKHLP16] Paulheim H, Lehmann J, Svatek V, Knoblock C, Horridge M, Lambrix P, Parsia B, (eds), *Joint Proceedings of 5th Workshop on Data Mining and Knowledge Discovery meets Linked Open Data (Know@LOD 2016) and 1st International Workshop on Completing and Debugging the Semantic Web (CoDeS 2016)*, (Heraklion, Greece), CEUR Workshop Proceedings Volume 1586, 2016.
http://ceur-ws.org/Vol-1586

[ILLP15] Ivanova V, Lambrix P, Lohmann S, Pesquita C, (eds), *Proceedings of the International Workshop on Visualizations and User Interfaces for Ontologies and Linked Data*, (Bethlehem, PA, USA), CEUR Workshop Proceedings Volume 1456, 2015.
http://ceur-ws.org/Vol-1456

[LHBPQSDG15] Lambrix P, Hyvönen E, Blomqvist E, Presutti V, Qi G, Sattler U, Ding Y, Ghidini C, (eds), *Knowledge Engineering and Knowledge Management - EKAW 2014 Satellite Events, VISUAL, EKM1, and ARCOE-Logic; Revised Selected Papers*, (Linköping, Sweden), LNAI 8982, Springer Verlag, 2015. ISBN 978-3-319-17965-0 (Print) 978-3-319-17966-7 (Online).
http://dx.doi.org/10.1007/978-3-319-17966-7

[JSLH14] Janowicz K, Schlobach S, Lambrix P, Hyvönen E, (eds) *Proceedings of the 19th International Conference on Knowledge Engineer-*

ing and Knowledge Management, (Linköping, Sweden), LNAI 8876, Springer Verlag, 2014. ISBN: 978-3-319-13703-2 (Print) 978-3-319-13704-9 (Online).
http://dx.doi.org/10.1007/978-3-319-13704-9

[LQHP14] Lambrix P, Qi G, Horridge M, Parsia B, (eds), *Proceedings of the third International Workshop on Debugging Ontologies and Ontology Mappings*, (Anissaras/Hersonissou, Greece), CEUR Workshop Proceedings Volume 1162, 2014.
http://ceur-ws.org/Vol-1162/

[LQHP13] Lambrix P, Qi G, Horridge M, Parsia B, (eds), *Proceedings of the Second International Workshop on Debugging Ontologies and Ontology Mappings*, (Montpellier, France), CEUR Workshop Proceedings Volume 999, 2013.
http://ceur-ws.org/Vol-999/

[LQH12] Lambrix P, Qi G, Horridge M (eds) *Proceedings of the First International Workshop on Debugging Ontologies and Ontology Mappings*, (Galway, Ireland), LECP 79, Linköping University Electronic Press, 2012.
https://ep.liu.se/en/conference-issue.aspx?series=ecp&issue=79

[KL10] Kemp G, Lambrix P (eds) *Poster and Demonstration Proceedings of the Seventh International Conference on Data Integration in the Life Sciences*, (Gothenburg, Sweden), 2010.

[LK10] Lambrix P, Kemp G, (eds) *Proceedings of the Seventh International Conference on Data Integration in the Life Sciences*, (Gothenburg, Sweden), LNBI 6254, Springer Verlag, 2010. ISBN 978-3-642-15119-4.
http://dx.doi.org/10.1007/978-3-642-15120-0

[LBLMP99] Lambrix P, Borgida A, Lenzerini M, Möller R, Patel-Schneider P, (eds), *Proceedings of the International Workshop on Description Logics*, Linköping, Sweden, 1999.
http://ceur-ws.org/Vol-22

[**Book Chapters**]

[Lam04] Lambrix P, Ontologies in Bioinformatics and Systems Biology, chapter 8 in Dubitzky W, Azuaje F (eds) *Artificial Intelligence Methods*

and Tools for Systems Biology, 129-146, Springer, 2004. ISBN: 1-4020-2859-8.
`http://dx.doi.org/10.1007/1-4020-2865-2_8`

[Lam14] Lambrix P, Semantic Web, Ontologies and Linked Data, chapter 6.05 in Brahme (ed in chief), Persson, (ed), *Comprehensive Biomedical Physics, Volume 6: Bioinformatics*, 67-76, Elsevier, 2014. ISBN: 978-0-444-53633-4.
`http://dx.doi.org/10.1016/B978-0-444-53632-7.01127-8`

[LADL18] Lambrix P, Armiento R, Delin A, Li H, Big Semantic Data Processing in the Materials Design Domain, in Sakr and Zomaya (eds), *Encyclopedia of Big Data Technologies*, Springer, 2018. ISBN: 978-3-319-63962-8
`https://doi.org/10.1007/978-3-319-63962-8_293-1`

[LADL22] Lambrix P, Armiento R, Delin A, Li H, FAIR Big Data in the Materials Design Domain, in Zomaya A, Taheri J, Sakr S (eds), *Encyclopedia of Big Data Technologies*, Springer, 2022.
`https://doi.org/10.1007/978-3-319-63962-8_293-2`

[LID12] Lambrix P, Ivanova V, Dragisic Z, Contributions of LiU/ADIT to Debugging Ontologies and Ontology Mappings, chapter in Lambrix P (ed) *Advances in Secure and Networked Information Systems - The ADIT Perspective*, 109-120, LiU-Tryck/LiU Electronic Press, 2012.

[LK12] Lambrix P, Kalyiaperumal R, Contributions of LiU/ADIT to Ontology Alignment, chapter in Lambrix P (ed) *Advances in Secure and Networked Information Systems - The ADIT Perspective*, 97-108, LiU-Tryck/LiU Electronic Press, 2012.

[LT08] Lambrix P, Tan H, Ontology alignment and merging, chapter 6 in Burger, Davidson, Baldock (eds), *Anatomy Ontologies for Bioinformatics: Principles and Practice*, 133-150, Springer, 2008. ISBN: 978-1-84628-884-5.
`http://dx.doi.org/10.1007/978-1-84628-885-2_6`

[LST09] Lambrix P, Strömbäck L, Tan H, Information integration in bioinformatics with ontologies and standards, chapter 8 in *Semantic Techniques for the Web: The REWERSE perspective*, LNCS 5500, 343-376, Springer, 2009.
`http://dx.doi.org/10.1007/978-3-642-04581-3_8`

[LTJS07] Lambrix P, Tan H, Jakonienė V, Strömbäck L, Biological Ontologies, chapter 4 in Baker, Cheung (eds), *Semantic Web: Revolutionizing Knowledge Discovery in the Life Sciences*, 85-99, Springer, 2007. ISBN-10: 0-387-48436-1, ISBN-13: 978-0-387-48436-5.
`http://dx.doi.org/10.1007/978-0-387-48438-9_5`

[**Journal Publications**] *We mark the level 2 (top) journals according to the Nordic journal list at the time of publishing with* **(level 2)**.

[DFHLLBR19] Dorea F, Flavie V, Hammar K, Lindberg A, Lambrix P, Blomqvist E, Revie C, Drivers for the development of an Animal Health Surveillance Ontology (AHSO) *Preventive Veterinary Medicine* 166:39-48, 2019. **(level 2)**
`https://doi.org/10.1016/j.prevetmed.2019.03.002`

[DILL17] Dragisic Z, Ivanova V, Li H, Lambrix P, Experiences from the Anatomy track in the Ontology Alignment Evaluation Initiative, *Journal of Biomedical Semantics* 8:56, 2017.
`http://dx.doi.org/10.1186/s13326-017-0166-5`

[FTWSKL16] Freire SM, Teodoro D, Wei-Kleiner F, Sundvall E, Karlsson D, Lambrix P, Comparing the Performance of NoSQL Approaches for Managing Archetype-Based Electronic Health Record Data, *PLoS ONE* 11(3): e0150069, 2016.
`http://dx.doi.org/10.1371/journal.pone.0150069`

[FLP24] Fu B, Lambrix P, Pesquita C, Editorial: Special Issue on Interactive Semantic Web, *Semantic Web Journal*, 15(5):1517-1518, 2024.
`https://doi.org/10.3233/SW-243672`

[Ghi23] Ghiringhelli L, Baldauf C, Bereau T, Brockhauser S, Carbogno C, Chamanara J, Cozzini S, Curtarolo S, Draxl C, Dwaraknath S, Fekete A, Kermode J, Koch C, Kühbach M, Ladines A N, Lambrix P, Himmer M-O, Levchenko S, Oliveira M, Michalchuk A, Miller R, Onat B, Pavone P, Pizzi G, Regler B, Rignanese G-M, Schaarschmidt J, Scheidgen M, Schneidewind A, Sheveleva T, Su C, Usvyat D, Valsson O, Wöll C, Scheffler M, Shared Metadata for Data-Centric Materials Science, *Scientific Data* 10:Article 626, 2023.
`https://doi.org/10.1038/s41597-023-02501-8`

[ILLP19si] Ivanova V, Lambrix P, Lohmann S, Pesquita C, Visualization and interaction for ontologies and linked data - Editorial, *Journal of*

Web Semantics 55:145-149, 2019.
https://doi.org/10.1016/j.websem.2018.10.001

[JL07] Jakonienė V, Lambrix P, A Tool for Evaluating Strategies for Grouping of Biological Data, *Journal of Integrative Bioinformatics, special issue on the 4th Integrative Bioinformatics Workshop* 4(3):83, 2007.
http://dx.doi.org/10.2390/biecoll-jib-2007-83

[Kli13] Klingström T, Soldatova L, Stevens R, Roos, TE, Swertz MA, Müller KM, Kalas M, Lambrix P, Taussig M, Litton J-E, Landegren U, Bongcam-Rudloff E, Workshop on laboratory protocol standards for the molecular methods database, *New Biotechnology* 30(2):109-113, 2013.
http://dx.doi.org/10.1016/j.nbt.2012.05.019

[Lam23] Lambrix P, Completing and Debugging Ontologies: State of the Art and Challenges in Repairing Ontologies. *ACM Journal of Data and Information Quality* 15:Article 41, 2023.
https://doi.org/10.1145/3597304

[LALHAL24] Lambrix P, Armiento R, Li H, Hartig O, Abd Nikooie Pour M, Li Y, The Materials Design Ontology, *Semantic Web Journal*, 15(2):481-515, 2024.
https://doi.org/10.3233/sw-233340

[LCS24] Lambrix P, Carlsson N, Säfvenberg R, Goal-based Performance Metrics for Ice Hockey Accounting for Goal Importance, *Journal of Sports Analytics*, Accepted 2024.

[LHP03] Lambrix P, Habbouche M, Pérez M, Evaluation of ontology development tools for bioinformatics, *Bioinformatics* 19(12):1564-1571, 2003. (Also best paper selection for and re-publication in the 2005 edition of the Yearbook of the International Medical Informatics Association, 547-554.) **(level 2)**
http://dx.doi.org/10.1093/bioinformatics/btg194

[LI13] Lambrix P, Ivanova V, A unified approach for debugging is-a structure and mappings in networked taxonomies, *Journal of Biomedical Semantics* 4:10, 2013.
http://dx.doi.org/10.1186/2041-1480-4-10

[LK17] Lambrix P, Kaliyaperumal R, A Session-based Ontology Alignment Approach enabling User Involvement, *Semantic Web Journal* 8(2):225-251, 2017.
http://dx.doi.org/10.3233/SW-160243

[LL13] Lambrix P, Liu Q, Debugging the missing is-a structure within taxonomies networked by partial reference alignments, *Data & Knowledge Engineering* 86:179-205, 2013. **(level 2)**
http://dx.doi.org/10.1016/j.datak.2013.03.003

[LO99a] Lambrix P, Ouchterlony U, Integration of Psychology, Economics and Information Technology in an Engineering Curriculum, *Computer Science Education* 9(2):162-180, 1999.
http://dx.doi.org/10.1076/csed.9.2.162.3809

[LP00] Lambrix P, Padgham L, Conceptual Modeling in a Document Management Environment using Part-of Reasoning in Description Logics, *Data & Knowledge Engineering* 32(1):51-86, 2000. **(level 2)**
http://dx.doi.org/10.1016/S0169-023X(99)00033-6

[LS00] Lambrix P, Shahmehri N, Querying Documents using Content, Structure and Properties, *Journal of Intelligent Information Systems* 15(3):287-307, 2000.
http://dx.doi.org/10.1023/A:1008784514647

[LT06a] Lambrix P, Tan H, SAMBO - A System for Aligning and Merging Biomedical Ontologies, *Journal of Web Semantics* 4(3):196-206, 2006.
http://dx.doi.org/10.1016/j.websem.2006.05.003

[LT07a] Lambrix P, Tan H, A Tool for Evaluating Ontology Alignment Strategies, *Journal on Data Semantics* VIII:182-202, LNCS 4380, 2007.
http://dx.doi.org/10.1007/978-3-540-70664-9_7

[LWD15] Lambrix P, Wei-Kleiner F, Dragisic Z, Completing the is-a structure in light-weight ontologies, *Journal of Biomedical Semantics* 6:12, 2015.
http://dx.doi.org/10.1186/s13326-015-0002-8

[LAL19j] Li H, Armiento R, Lambrix P, A Method for Extending Ontologies with Application to the Materials Science Domain, *Data Science Journal* 18(1):Article 50, 2019.
http://doi.org/10.5334/dsj-2019-050

[LHAL23] Li H, Hartig O, Armiento R, Lambrix P, Ontology-Based GraphQL Server Generation for Data Access and Data Integration. *Semantic Web Journal*, 15(5):1639-1675, 2024.
`http://doi.org/10.3233/SW-233550`

[LDFIJLP19] Li H, Dragisic Z, Faria D, Ivanova V, Jimenez-Ruiz E, Lambrix P, Pesquita C, User validation in ontology alignment: functional assessment and impact, *The Knowledge Engineering Review* 34:e15, 2019. **(level 2)**
`https://doi.org/10.1017/S0269888919000080`

[PL05] Padgham L, Lambrix P, Formalisations of capabilities for BDI-agents, *Autonomous Agents and Multi-Agent Systems* 10(3):249-271, 2005.
`http://dx.doi.org/10.1007/s10458-004-4345-2`

[SHL07] Strömbäck L, Hall D, Lambrix P, A review of standards for data exchange within systems biology, *Proteomics* 7(6):857-867, 2007. Invited contribution. **(level 2)**
`http://dx.doi.org/10.1002/pmic.200600438`

[SJTL06] Strömbäck L, Jakonienė V, Tan H, Lambrix P, Representing, storing and accessing molecular interaction data: a review of models and tools, *Briefings in Bioinformatics* 7(4):331-338, 2006. Invited contribution.
`http://dx.doi.org/10.1093/bib/bbl039`

[SL05a] Strömbäck L, Lambrix P, Representations of molecular pathways: An evaluation of SBML, PSI MI and BioPAX, *Bioinformatics* 21(24):-4401-4407, 2005. **(level 2)**
`http://dx.doi.org/10.1093/bioinformatics/bti718`

[**Video Journal Publications**]

[IL13c] Ivanova V, Lambrix P, A System for Aligning Taxonomies and Debugging Taxonomies and Their Alignments, *Video Journal of Semantic Data Management Abstracts*, Volume 2, 2013.
`http://videolectures.net/semantic_ivanova_taxonomies/`

[**Magazine Publications**]

[LS07a] Lambrix P, Strömbäck L, Where is my protein? - Issues in information integration, *BIOforum Europe*, 11(7-8):24-26, 2007. Invited contribution. *Also republished in the 2007 Highlights Issue, 12(1-2):24-25, 2008.*

[Conference Publications and LNCS/CCIS/IEEE Workshop Publications]

As it is common in the computer science field to publish in conferences, we mark the top conferences according to the CORE classification at the time of publishing with **(A)/(A*)***. These are equally prestiguous as good journals.*

[ALAL23] Abd Nikooie Pour M, Li H, Armiento R, Lambrix P, Phrase2Onto: A Tool to Support Ontology Extension, *27th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems - KES 2023*, Procedia Computer Science 225:1415-1424, Athens, Greece, 2023.
`https://doi.org/10.1016/j.procs.2023.10.130`

[AALS06] Aberg C, Aberg J, Lambrix P, Shahmehri N, A Platform to Evaluate the Technology for Service Discovery in the Semantic Web, *Twenty-First National Conference on Artificial Intelligence - AAAI-2006*, 1253-1258, Boston, MA, USA, 2006. **(A*)**
`https://www.aaai.org/Papers/AAAI/2006/AAAI06-196.pdf`

[ALS05] Aberg C, Lambrix P, Shahmehri N, An Agent-based Framework for Integrating Workflows and Web Services, *IEEE WETICE Workshop on Agent-based Computing for Enterprise Collaboration*, 27-32, Linköping, Sweden, 2005. *Best paper award.*
`http://dx.doi.org/10.1109/WETICE.2005.17`

[BLLKA09] Baker C, Lambrix P, Laurila Bergman J, Kanagasabai R, Ang WT, Slicing through the scientific literature, *6th International Workshop on Data Integration in the Life Sciences - DILS09*, LNBI 5647, 127-140, Manchester, UK, 2009.
`http://dx.doi.org/10.1007/978-3-642-02879-3_11`

[CTL06] Chen B, Tan H, Lambrix P, Structure-based filtering for ontology alignment, *IEEE WETICE Workshop on Semantic Technologies in Collaborative Applications*, 364-369, Manchester, UK, 2006.
`http://dx.doi.org/10.1109/WETICE.2006.64`

[CDCL15] Chiatti A, Dragisic Z, Cerquitelli T, Lambrix P, Reducing the search space in ontology alignment using clustering techniques and topic identification, *8th International Conference on Knowledge Capture*, Article No. 21, Palisades, NY, USA, 2015. **(A)**
`http://dx.doi.org/10.1145/2815833.2816959`

[CSL04] Chisalita I, Shahmehri N, Lambrix P, Traffic Accidents Modeling and Analysis using Temporal Reasoning, *IEEE Conference on Intelligent Transportation Systems*, 378-383, Washington, D.C., USA, 2004.
`http://dx.doi.org/10.1109/ITSC.2004.1398928`

[DILFJP16] Dragisic Z, Ivanova V, Lambrix P, Faria D, Jimenez-Ruiz E, Pesquita C, User validation in ontology alignment, *15th International Semantic Web Conference*, LNCS 9981, 200-217, Kobe, Japan, 2016. **(A)**
`http://dx.doi.org/10.1007/978-3-319-46523-4_13`

[DLW14a] Dragisic Z, Lambrix P, Wei-Kleiner F, Completing the is-a structure of biomedical ontologies, *10th International Conference on Data Integration in the Life Sciences*, LNBI 8574, 66-80, Lisbon, Portugal, 2014.
`http://dx.doi.org/10.1007/978-3-319-08590-6_7`

[DJLSW06] Doms A, Jakonienė V, Lambrix P, Schroeder M, Wächter T, Ontologies and Text Mining as a Basis for a Semantic Web for the Life Sciences, *Reasoning Web, Second International Summer School*, LNCS 4126, 164-183, 2006.
`http://dx.doi.org/10.1007/11837787_7`

[DSL03a] Duma C, Shahmehri N, Lambrix P, A Flexible Category-Based Collusion-Resistant Key Management Scheme for Multicast, *18th IFIP International Information Security Conference*, 133-144, Athens, Greece, 2003.
`http://dx.doi.org/10.1007/978-0-387-35691-4_12`

[DSL03b] Duma C, Shahmehri N, Lambrix P, A Hybrid Key Tree Scheme for Multicast to Balance Security and Efficiency Requirements, *IEEE WETICE Workshop on Enterprise Security*, 208-213, Linz, Austria, 2003.
`http://dx.doi.org/10.1109/ENABL.2003.1231409`

[FHLMW16] 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. **(A)**
http://dx.doi.org/10.1145/2839509.2844653

[GWCL21] Gonzalez Dos Santos T, Wang C, Carlsson N, Lambrix P, Predicting Season Outcomes for the NBA, *8th Workshop on Machine Learning and Data Mining for Sports Analytics (2021)*, CCIS 1517, 129-142, Virtual Conference, 2022.
https://doi.org/10.1007/978-3-031-02044-5_11

[IBPL17a] Ivanova V, Bach B, Pietriga E, Lambrix P, Alignment Cubes: Towards Interactive Visual Exploration and Evaluation of Multiple Ontology Alignments, *16th International Semantic Web Conference*, 400-417, Vienna, Austria, 2017. **(A)**
http://dx.doi.org/10.1007/978-3-319-68288-4_24

[IL13a] Ivanova V, Lambrix P, A unified approach for aligning taxonomies and debugging taxonomies and their alignments, *10th Extended Semantic Web Conference - ESWC 2013*, LNCS 7882, 1-15, Montpellier, France, 2013. **(A)**
http://dx.doi.org/10.1007/978-3-642-38288-8_1

[ILA15] Ivanova V, Lambrix P, Åberg J, Requirements for and Evaluation of User Support for Large-Scale Ontology Alignment, *12th Extended Semantic Web Conference - ESWC 2015*, LNCS 9088, 3-20, Portoroz, Slovenia, 2015. **(A)**
http://dx.doi.org/10.1007/978-3-319-18818-8_1

[JRL06] Jakonienė V, Rundqvist D, Lambrix P, A method for similarity-based grouping of biological data, *3rd International Workshop on Data Integration in the Life Sciences - DILS06*, LNBI 4075, 136-151, Hinxton, UK, 2006.
http://dx.doi.org/10.1007/11799511_13

[Lam92a] Lambrix P, Versioning Aspects of Strongly Connected Composite Objects, *Third Information Systems Developers Workbench*, Gdansk, Poland, 1992.

[Lam05] Lambrix P, Towards a Semantic Web for Bioinformatics using Ontology-based Annotation, *14th IEEE International Workshops on Enabling Technologies: Infrastructures for Collaborative Enterprises*,

3-7, Linköping, Sweden, 2005. Invited talk.
http://dx.doi.org/10.1109/WETICE.2005.58

[LC22] Lambrix P, Carlsson N, Performance Metrics for Ice Hockey Accounting for Goal Importance, *Proceedings of the Linköping Hockey Analytics Conference LINHAC 2022 Research Track*, LECP 191, 11-15, 2022.
https://doi.org/10.3384/ecp191003

[LDI12] Lambrix P, Dragisic Z, Ivanova V, Get my pizza right: Repairing missing is-a relations in $\mathcal{ALC}$ ontologies, *Second Joint International Semantic Technology Conference*, LNCS 7774, 17-32, Nara, Japan, 2012.
http://dx.doi.org/10.1007/978-3-642-37996-3_2

[LE03] Lambrix P, Edberg A, Evaluation of ontology merging tools in bioinformatics, *Pacific Symposium on Biocomputing - PSB03*, 8:589-600, Kauai, Hawaii, USA, 2003.
https://doi.org/10.1142/9789812776303_0055

[LJ03] Lambrix P, Jakonienė V, Towards transparent access to multiple biological databanks, *First Asia-Pacific Bioinformatics Conference*, 53-60, Adelaide, Australia, 2003.
http://dx.doi.org/10.5555/820189.820196

[LK13] Lambrix P, Kalyiaperumal R, A Session-Based Approach for Aligning Large Ontologies, *10th Extended Semantic Web Conference - ESWC 2013*, LNCS 7882, 46-60, Montpellier, France, 2013. **(A)**
http://dx.doi.org/10.1007/978-3-642-38288-8_4

[LK98] Lambrix P, Kamkar M, Computer Science as an Integrated Part of Engineering Education, *Third ACM SIGCSE/SIGCUE Conference on Integrating Technology into Computer Science Education*, 153-156, Dublin, Ireland, 1998. **(A)**
http://dx.doi.org/10.1145/282991.283105

[LL09] Lambrix P, Liu Q, Using partial reference alignments to align ontologies, *6th European Semantic Web Conference - ESWC09*, LNCS 5554, 188-202, Heraklion, Greece, 2009. **(A)**
http://dx.doi.org/10.1007/978-3-642-02121-3_17

[LLT09a] Lambrix P, Liu Q, Tan H, Repairing the missing is-a structure of ontologies, *4th Asian Semantic Web Conference - ASWC09*, LNCS

5926, 76-90, Shanghai, China, 2009.
http://dx.doi.org/10.1007/978-3-642-10871-6_6

[LM96] Lambrix P, Maleki J, Learning Composite Concepts in Description Logics: A First Step, *Ninth International Symposium on Methodologies for Intelligent Systems - ISMIS 96*, LNAI 1079, 68-77, Zakopane, Poland, 1996.
http://dx.doi.org/10.1007/3-540-61286-6_132

[LP97] Lambrix P, Padgham L, A Description Logic Model for Querying Knowledge Bases for Structured Documents, *Tenth International Symposium on Methodologies for Intelligent Systems - ISMIS 97*, LNAI 1325, 72-83, Charlotte, North Carolina, USA, 1997.
http://dx.doi.org/10.1007/3-540-63614-5_7

[LP98] Lambrix P, Padgham L, Using Knowledge Representation for Agent World Model, *International Conference on Multi-Agent Systems - ICMAS 98*, 443-444, Paris, France, 1998. **(A)**
http://dx.doi.org/10.1109/ICMAS.1998.699277

[LR93] Lambrix P, Rönnquist R, Terminological Logic Involving Time and Evolution: A Preliminary Report, *Seventh International Symposium on Methodologies for Intelligent Systems - ISMIS 93*, LNAI 689, 162-171, Trondheim, Norway, 1993.
http://dx.doi.org/10.1007/3-540-56804-2_16

[LS98] Lambrix P, Shahmehri N, TRIFU: The Right Information For yoU", *31st Hawaii International Conference on System Sciences, Volume IV - Internet and the Digital Economy Track*, 505-512, Hawaii, 1998. **(A)**
http://dx.doi.org/10.1109/HICSS.1998.655308

[LS01] Lambrix P, Shahmehri N, Querying Document Bases using Content, Structure and Properties, *Ontologies and Search - 2nd OntoQuery Workshop*, 15-21, Copenhagen, Denmark, 2001. Invited contribution.

[LSJ99] Lambrix P, Shahmehri N, Jacobsen S, Querying Document Bases by Content, Structure and Properties, *Eleventh International Symposium on Methodologies for Intelligent Systems - ISMIS 99*, LNCS 1609, 123-132, Warsaw, Poland, 1999.
http://dx.doi.org/10.1007/BFb0095097

[LSW98] Lambrix P, Shahmehri N, Wahllöf N, A Default Extension to Description Logics for Use in an Intelligent Search Engine, *31st Hawaii*

International Conference on System Sciences, Volume V - Modeling Technologies and Intelligent Systems Track, 28-35, Hawaii, 1998. **(A)**
`http://dx.doi.org/10.1109/HICSS.1998.648293`

[LSÅ97] Lambrix P, Shahmehri N, Åberg J, Towards Creating a Knowledge Base for World-Wide Web Documents, *IASTED International Conference on Intelligent Information Systems*, 507-511, Freeport, Bahamas, 1997.
`http://dx.doi.org/10.1109/IIS.1997.645367`

[LT05b] Lambrix P, Tan H, A Framework for Aligning Ontologies, *Third Workshop on Principles and Practice of Semantic Web Reasoning*, LNCS 3703, 17-31, Dagstuhl, Germany, 2005.
`http://dx.doi.org/10.1007/11552222_2`

[LKCL20] Lehmus Persson T, Kozlica H, Carlsson N, Lambrix P, Prediction of tiers in the ranking of ice hockey players, *7th Workshop on Machine Learning and Data Mining for Sports Analytics*, CCIS 1324, 89-100, Gent, Belgium, 2020.
`https://doi.org/10.1007/978-3-030-64912-8_8`

[LAL20] Li H, Armiento R, Lambrix P, An Ontology for the Materials Design Domain, *19th International Semantic Web Conference*, LNCS 12507, 212–227, Athens, Greece (Virtual Conference), 2020. **(A)**
`http://dx.doi.org/10.1007/978-3-030-62466-8_14`

[LL23a] Li Y, Lambrix P, Repairing $\mathcal{EL}$ Ontologies Using Weakening and Completing, *20th European Semantic Web Conference - ESWC 2023*, LNCS 13870, 298-315, Hersonissos, Greece, 2023. **(A)**
`https://doi.org/10.1007/978-3-031-33455-9_18`

[LL24a] Li Y, Lambrix P, Repairing Networks of $\mathcal{EL}_\perp$ Ontologies using Weakening and Completing, *23th International Semantic Web Conference - ISWC 2024*, LNCS 15231, 107-125, Baltimore, MD, USA, 2024. **(A)**
`https://doi.org/10.1007/978-3-031-77844-5_6`

[LJCL19] Lindström P, Jacobsson L, Carlsson N, Lambrix P, Predicting Player Trajectories in Shot Situations in Soccer, *7th Workshop on Machine Learning and Data Mining for Sports Analytics*, CCIS 1324, 62-75, Gent, Belgium, 2020. (Presented at MLSA 2019 in Würzburg, Germany, 2019. Due to problem related to MLSA 2019 proceedings gener-

ation published in MLSA 2020 proceedings.)
https://doi.org/10.1007/978-3-030-64912-8_6

[LiL10a] Liu Q, Lambrix P, Debugging the missing is-a structure of networked ontologies, *7th Extended Semantic Web Conference - ESWC10*, LNCS 6089, 478-482, Heraklion, Greece, 2010. **(A)**
http://dx.doi.org/10.1007/978-3-642-13489-0_47

[LiL10b] Liu Q, Lambrix P, A system for debugging missing is-a structure in networked ontologies, *Seventh International Conference on Data Integration in the Life Sciences - DILS 2010*, LNBI 6254, 50-57, Gothenburg, Sweden, 2010.
http://dx.doi.org/10.1007/978-3-642-15120-0_5

[LCL18] Ljung D, Carlsson N, Lambrix P, Player pairs valuation in ice hockey, *5th Workshop on Machine Learning and Data Mining for Sports Analytics - MLSA 2018*, LNAI 11330, 82-92, Dublin, Ireland, 2019.
https://doi.org/10.1007/978-3-030-17274-9_7

[NLC18] Nsolo E, Lambrix P, Carlsson N, Player valuation in European football, *5th Workshop on Machine Learning and Data Mining for Sports Analytics - MLSA 2018*, LNAI 11330, 42-54, Dublin, Ireland, 2019.
https://doi.org/10.1007/978-3-030-17274-9_4

[ORWCL24] Olivestam A, Rosendahl A, Wilderoth E, Carlsson N, Lambrix P, Characterizing Playing Styles for Ice Hockey Players, *Linköping Hockey Analytics Conference Research Track*, LECP 209, 39-50, Linköping, Sweden, 2024.
https://doi.org/10.3384/ecp209004

[PL94] Padgham L, Lambrix P, A Framework for Part-Of Hierarchies in Terminological Logics, *Principles of Knowledge Representation and Reasoning: Proceedings of the Fourth International Conference - KR 94*, 485-496, Bonn, Germany, 1994. **(A*)**
http://dx.doi.org/10.1016/B978-1-4832-1452-8.50140-8

[PL00] Padgham L, Lambrix P, Agent Capabilities: Extending BDI Theory, *Seventeenth National Conference on Artificial Intelligence - AAAI-2000*, 68-73, Austin, Texas, USA, 2000. **(A*)**
https://www.aaai.org/Papers/AAAI/2000/AAAI00-011.pdf

[PILL18] Pesquita C, Ivanova V, Lohmann S, Lambrix P, A Framework to Conduct and Report on Empirical User Studies in Semantic Web Contexts, *21st International Conference on Knowledge Engineering and Knowledge Management - EKAW 2018*, LNCS 11313, 567-583, Nancy, France, 2018.
https://dx.doi.org/10.1007/978-3-030-03667-6_36

[SCL19] Sans Fuentes C, Carlsson N, Lambrix P, Player impact measures for scoring in ice hockey, *MathSport International 2019 Conference*, 307-317, Athens, Greece, 2019.

[SL05b] Strömbäck L, Lambrix P, Modeling for simulation and data storage of cellular pathways: Similarities and differences, *Fourth Modeling and Simulation in Biology, Medicine and Biomedical Engineering Conference - BioMedSim*, 65-72, Linköping, Sweden, 2005.

[SWFL17] Sundvall E, Wei-Kleiner F, Freire SM, Lambrix P., Querying archetype-based Electronic Health Records using Hadoop and Dewey encoding of openEHR models, *Studies in Health Technology and Informatics Vol 235: Informatics for Health: Connected Citizen-Led Wellness and Population Health*, 406-410, Manchester, UK, 2017.
http://dx.doi.org/10.3233/978-1-61499-753-5-406

[SCL23a] Sävfenberg R, Carlsson N, Lambrix P, Simple and Practical Goal Importance Metrics, *Linköping Hockey Analytics Conference*, LECP 201, 40-52, Linköping, Sweden, 2023.
https://doi.org/10.3384/ecp201.4

[SCL23b] Sävfenberg R, Carlsson N, Lambrix P, Identifying Player Roles in Ice Hockey *10th Workshop on Machine Learning and Data Mining for Sports Analytics - MLSA 2023*, CCIS 2035, 131-141, Torino, Italy, 2024.
https://doi.org/10.1007/978-3-031-53833-9_11

[SNLCL24] Säfvenberg R, Nordgaard A, Lidmark Eriksson O, Carlsson N, Lambrix P, Age of Peak Performance among Soccer Players in Sweden, *Sports Analytics, First International Conference ISACE 2024*, LNCS 14794, 278-290, Paris, France, 2024.
https://doi.org/10.1007/978-3-031-69073-0_24

[SSCL23] Sävfenberg R, Svarén M, Carlsson N, Lambrix P, The Importance of Special Teams in Ice Hockey, *Linköping Hockey Analytics Conference*,

LECP 201, 53-65, Linköping, Sweden, 2023.
https://doi.org/10.3384/ecp201.5

[TJLAS06] Tan H, Jakonienė V, Lambrix P, Aberg J, Shahmehri N, Alignment of Biomedical Ontologies using Life Science Literature, *International Workshop on Knowledge Discovery in Life Science Literature*, LNBI 3886, 1-17, Singapore, 2006.
http://dx.doi.org/10.1007/11683568_1

[TL07a] Tan H, Lambrix P, A method for recommending ontology alignment strategies, *6th International Semantic Web Conference*, LNCS 4825, 494-507 Busan, Korea, 2007. **(A)**
http://dx.doi.org/10.1007/978-3-540-76298-0_36

[TGL93a] Timmerman M, Gielen F, Lambrix P, High Level Tools for the Debugging of Real-Time Multiprocessor Systems, *Fifth Euromicro Workshop on Real Time Systems*, 140-146, Oulu, Finland, 1993, and *Third ACM/ONR Workshop on Parallel and Distributed Debugging, SIGPLAN NOTICES, Vol 28(12)*, 151-157, San Diego, California, 1993.
http://dx.doi.org/10.1145/174266.170489

[TGL93b] Timmerman M, Gielen F, Lambrix P, A Knowledge-Based Approach for the Debugging of Real-Time Multiprocessor Systems, *First IEEE Workshop on Real-Time Applications*, Manhattan, New York, 1993.
http://dx.doi.org/10.1109/RTA.1993.263122

[VSJCL21] Vik J, Shi M-C, Jansher R, Carlsson N, Lambrix P, Not all goals are equally important - a study for the NHL, *MathSport International 2021 Conference*, 26-31, Virtual Conference, 2021.

[WDL14] Wei-Kleiner F, Dragisic Z, Lambrix P, Abduction Framework for Repairing Incomplete $\mathcal{EL}$ Ontologies: Complexity Results and Algorithms, *28th AAAI Conference on Artificial Intelligence*, 1120-1127, Quebec, Canada, 2014. **(A*)**
https://www.aaai.org/ocs/index.php/AAAI/AAAI14/paper/view/8239/8547

[WTWLS06] Wächter T, Tan H, Wobst A, Lambrix P, Schroeder M, A Corpus-driven Approach for Design, Evolution and Alignment of Ontologies, *Winter Simulation Conference*, 1595-1602, 2006. Invited con-

tribution.
http://dx.doi.org/10.1109/WSC.2006.322932

[Workshops and minor venues]

[ALAL21a] Abd Nikooie Pour M, Li H, Armiento R, Lambrix P, A First Step towards Extending the Materials Design Ontology, *ESWC Workshop on Domain Ontologies for Research Data Management in Industry Commons of Materials and Manufacturing - DORIC-MM 2021*, 1-11, Virtual Workshop, 2021. [workshop @ A conference]

[ALAL21b] Abd Nikooie Pour M, Li H, Armiento R, Lambrix P, A First Step towards a Tool for Extending Ontologies, *6th International Workshop on Visualization and Interaction for Ontologies and Linked Data*, 1-12, Virtual Workshop, 2021. [workshop @ A conference]
https://ceur-ws.org/Vol-3023/paper2.pdf

[ATWLML24] Abd Nikooie Pour M, Tarafder P, Wiberg A, Li H, Moverare J, Lambrix P, PBF-AMP-Onto: An Ontology for Powder Bed Fusion Additive Manufacturing Processes, *International Workshop on Semantic Materials Science*, 2-14, Amsterdam, The Netherlands, 2024.
https://ceur-ws.org/Vol-3760/paper10.pdf

[ALTS05] Aberg C, Lambrix P, Takkinen J, Shahmehri N, sButler: A Mediator between Organizations' Workflows and the Semantic Web, *WWW 2005 Workshop on Web Service Semantics: Towards Dynamic Business Integration*, Chiba, Japan, 2005. [workshop @ A* conference]

[ALLA24] Andersson OB, Li H, Lambrix P, Armiento R, An ontology for units of measures across history, standards, and scientific and technology domains *International Workshop on Semantic Materials Science*, 15-28, Amsterdam, The Netherlands, 2024.
https://ceur-ws.org/Vol-3760/paper8.pdf

[BLKLALL23] Blomqvist E, Li H, Keskisä;rkkä; R, Lindecrantz M, Abd Nikooie Pour M, Li Y, Lambrix P, Cross-domain Modelling – A Network of Core Ontologies for the Circular Economy, *14th Workshop on Ontology Design and Patterns - WOP 2023*, Athens, Greece, 2023. [workshop @ A conference]
https://ceur-ws.org/Vol-3636/paper1.pdf

[BLBLD22] Blomqvist E, Lindecrantz M, Blomsma F, Lambrix P, De Meester B, Decentralized Digital Twins of Circular Value Networks - A Position Paper, *Third International Workshop On Semantic Digital Twins (SeDiT 2022)*, Hersonissos, Greece, 2022. [workshop @ A conference] https://ceur-ws.org/Vol-3291/paper1.pdf

[DLB15] Dragisic Z, Lambrix P, Blomqvist E, Integrating Ontology Debugging and Matching into the eXtreme Design Methodology, *6th Workshop on Ontology and Semantic Web Patterns*, Bethlehem, Pennsylvania, USA, 2015. [workshop @ A conference]
http://ceur-ws.org/Vol-1461/WOP2015_paper_1.pdf

[DLW14b] Dragisic Z, Lambrix P, Wei-Kleiner F, A System for Debugging Missing Is-a Structure in $\mathcal{EL}$ Ontologies, *3rd International Workshop on Debugging Ontologies and Ontology Mappings*, 51-58, Anissaras/Hersonissou, Greece, 2014. [Demonstration paper @ A conference]
http://ceur-ws.org/Vol-1162/paper5.pdf

[DLL21] Dragisic Z, Li Y, Lambrix P, RepOSE-CTab - A Protégé Plugin for Completing Ontologies, *6th International Workshop on Visualization and Interaction for Ontologies and Linked Data*, 56-62, Virtual Workshop, 2021. [workshop @ A conference]
https://ceur-ws.org/Vol-3023/paper1.pdf

[DSL04] Duma C, Shahmehri N, Lambrix P, Efficient Storage for Category-Based Group Key Management, *Fifth Ph.D. Student Conference on Computer Science and Systems Engineering*, 139-146, Norrköping, Sweden, 2004.

[FSKL12] Freire S, Sundvall E, Karlsson D, Lambrix P, Performance of XML Databases for Epidemiological Queries in Archetype-Based EHRs, *Scandinavian Conference on Health Informatics*, 51-57, Linköping, Sweden, 2012.
https://ep.liu.se/en/conference-article.aspx?series=ecp&issue=70&Article_No=9

[FHLMW15] 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*, Uppsala, Sweden, 2015.

[HLTK01] 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 - in Swedish.

[IBPL17b] Ivanova V, Bach B, Pietriga E, Lambrix P, Alignment Cubes: Interactive Visual Exploration and Evaluation of Multiple Ontology Alignments, *16th International Semantic Web Conference Posters and Demos*, Vienna, Austria, 2017. [Demonstration paper @ A conference]
`http://ceur-ws.org/Vol-1963/paper496.pdf`

[IL12] Ivanova V, Lambrix P, A System for Debugging Taxonomies and their Alignments, *First International Workshop on Debugging Ontologies and Ontology Mappings*, 37-42, Galway, Ireland, 2012. [Demonstration paper]
`https://ep.liu.se/en/conference-article.aspx?series=ecp&issue=79&Article_No=4`

[IL13b] Ivanova V, Lambrix P, A system for aligning taxonomies and debugging taxonomies and their alignments, *10th Extended Semantic Web Conference Satellite Events- ESWC 2013*, LNCS 7955, 152-156, Montpellier, France, 2013. **(A)** [Demonstration paper @ A conference]
`http://dx.doi.org/10.1007/978-3-642-41242-4_15`

[IL14] Ivanova V, Lambrix P, User involvement for large-scale ontology alignment, *International Workshop on Visualizations and User Interfaces for Knowledge Engineering and Linked Data Analytics*, 34-47, Linköping, Sweden, 2014.
`http://ceur-ws.org/Vol-1299/paper4.pdf`

[ILHL12] Ivanova V, Laurila Bergman J, Hammerling U, Lambrix P, Debugging Taxonomies and their Alignments: the ToxOntology - MeSH Use Case, *First International Workshop on Debugging Ontologies and Ontology Mappings*, 25-36, Galway, Ireland, 2012.
`https://ep.liu.se/en/conference-article.aspx?series=ecp&issue=79&Article_No=3`

[JL05] Jakonienė V, Lambrix P, Ontology-based integration for bioinformatics, *VLDB Workshop on Ontologies-based techniques for DataBases and Information Systems - ODBIS 2005*, 55-58, Trondheim, Norway, 2005. [workshop @ A* conference]

[KLCCL19] Keskisärkkä, R, Li H, Cheng S, Carlsson N, Lambrix P, An Ontology for Ice Hockey, *ISWC 2019 Satellites - Proceedings of the ISWC*

2019 Satellite Tracks (Posters & Demonstrations, Industry, and Outrageous Ideas) co-located with 18th International Semantic Web Conference (ISWC 2019), CEUR Workshop Proceedings Volume 2456, 13-16, Auckland, New Zealand, 2019. [workshop @ A conference]
`https://ceur-ws.org/Vol-2456/paper4.pdf`

[Lam92b] Lambrix P, Temporal Aspects of Composite Objects, *Second Golden West International Conference on Intelligent Systems*, 97-103, Reno, Nevada, 1992.

[Lam92c] Lambrix P, Versioning of Strongly Connected Composite Objects, *Second Golden West International Conference on Intelligent Systems*, 116-125, Reno, Nevada, 1992.

[Lam94] Lambrix P, Extending Standard Description Logics, *International Workshop on Description Logics*, 42-44, Bonn, Germany, 1994.

[Lam97] Lambrix P, Some Notes on Parts, Wholes and Time, *Tenth International Symposium on Methodologies for Intelligent Systems - Poster Session - ISMIS 97*, 85-96, Charlotte, North Carolina, USA, 1997. [Poster paper]

[Lam01a] Lambrix P, Introduction to description logics, *Ontologies and Search - 2nd OntoQuery Workshop*, 53-56, Copenhagen, Denmark, 2001. Invited tutorial.

[Lam11] Lambrix P, A framework for session-based ontology alignment, *Sixth International Workshop on Ontology Matching - OM 2011*, Bonn, Germany, 2011. [Poster paper.]

[LDIA16] Lambrix P, Dragisic Z, Ivanova V, Anslow C, Visualization for Ontology Evolution, *2nd International Workshop on Visualization and Interaction for Ontologies and Linked Data*, 54-67, Kobe, Japan, 2016. [workshop @ A conference]
`http://ceur-ws.org/Vol-1704/paper5.pdf`

[LEMT03] Lambrix P, Edberg A, Manis C, Tan H, Merging DAML+OIL bio-ontologies, *International Workshop on Description Logics*, Rome, Italy, 2003.
`http://sunsite.informatik.rwth-aachen.de/Publications/CEUR-WS/Vol-81/lambrix.ps`

[LGK97] Lambrix P, Göthe Lundgren M, Kamkar M, Integrated Engineering Education, *Verklighet och Vision - 1:a universitetspedagogiska konferensen vid Linköpings universitet*, Linköping, 1997.

[LL98] Lambrix P, Larocchia P, Learning Composite Concepts, *International Workshop on Description Logics*, 147-152, Trento, Italy, 1998. `http://sunsite.informatik.rwth-aachen.de/Publications/CEUR-WS/Vol-11/patla.ps`

[LL11a] Lambrix P, Liu Q, RepOSE: A System for Debugging is-a Structure in Networked Taxonomies, *Demo at the 10th International Semantic Web Conference - ISWC 2011*, Bonn, Germany, 2011. [Demonstration paper @ A conference]

[LL11b] Lambrix P, Liu Q, Debugging is-a structure in networked taxonomies, *Fourth International Workshop on Semantic Web Applications and Tools for Life Sciences - SWAT4LS11*, 58-65, London, UK, 2011.
`http://dx.doi.org/10.1145/2166896.2166914`

[LLT09b] Lambrix P, Liu Q, Tan H, RepOSE: an environment for repairing missing ontological structure, *4th Asian Semantic Web Conference - ASWC09*, LNCS 5926, 365-366, Shanghai, China, 2009. [Demonstration paper]
`http://dx.doi.org/10.1007/978-3-642-10871-6_26`

[LLT09c] Lambrix P, Liu Q, Tan H, A system for repairing missing is-a structure in ontologies, *Semantic Web Applications and Tools for Life Sciences - SWAT4LS09*, Amsterdam, Netherlands, 2009. [Demonstration paper]

[LLT09d] Lambrix P, Liu Q, Tan H, Aligning Anatomy Ontologies in the Ontology Alignment Evaluation Initiative, *25th Workshop of the Swedish Artificial Intelligence Society*, 13-20, Linköping, Sweden, 2009.
`http://www.ep.liu.se/ecp/035/004/ecp0935004.pdf`

[LO99b] Lambrix P, Ouchterlony U, Samarbete Teknik - Psykologi - Ekonomi, *3:e universitetspedagogiska konferensen vid Linköpings universitet*, 7-9, Linköping, 1999 - in Swedish.

[LP95a] Lambrix P, Padgham L, Analysis of Part-of Reasoning in Description Logics for Use in a Document Management Application, *Eighth*

International Symposium on Artificial Intelligence, 102-110, Monterrey, Mexico, 1995.

[LP95b] Lambrix P, Padgham L, Part-of Reasoning in Description Logics: A Document Management Application, *International Workshop on Description Logics*, 106-108, Roma, Italy, 1995.

[LP96a] Lambrix P, Padgham L, A Knowledge Base for Structured Documents, *First Australian Document Computing Symposium*, Melbourne, Australia, 1996.

[LP96b] Lambrix P, Padgham L, A Description Logic for Composite Objects for Domain Modeling in an Agent-Oriented Application, *International Workshop on Description Logics*, Boston, MA, USA, 1996.

[LSW97] Lambrix P, Shahmehri N, Wahllöf N, Dwebic: An Intelligent Search Engine based on Default Description Logics, *International Workshop on Description Logics*, 119-121, Gif sur Yvette, France, 1997.

[LS07b] Lambrix P, Strömbäck L, Teaching databases to hundreds of engineering students, *2nd Workshop on Computer Science Education*, Linköping, Sweden, 2007.

[LT05a] Lambrix P, Tan H, Merging DAML+OIL Ontologies, Barzdins J, Caplinskas A (eds) *Databases and Information Systems - Selected Papers from the Sixth International Baltic Conference on Databases and Information Systems*, 249-258, IOS Press, 2005.

[LTL08] Lambrix P, Tan H, Liu Q, SAMBO and SAMBOdtf results for the Ontology Alignment Evaluation Initiative 2008, *Third International Workshop on Ontology Matching*, 190-198, Karlsruhe, Germany, 2008.

[LTX08] Lambrix P, Tan H, Xu W, Literature-based alignment of ontologies. *Third International Workshop on Ontology Matching*, 219-223, Karlsruhe, Germany, 2008. [workshop @ A conference]

[LWDI13] Lambrix P, Wei-Kleiner F, Dragisic Z, Ivanova V, Repairing missing is-a structure in ontologies is an abductive reasoning problem, *Second International Workshop on Debugging Ontologies and Ontology Mappings*, 33-44, Montpellier, France, 2013. [workshop @ A conference] `http://ceur-ws.org/Vol-999/paper3.pdf`

[LALLBL23] Li H, Abd Nikooie Pour M, Li Y, Lindecrantz M, Blomqvist E, Lambrix P, A Survey of General Ontologies for the Cross-Industry Domain of Circular Economy, *1st International Workshop on Knowledge Graphs for Sustainability - KG4S 2023; WWW '23 Companion: Companion Proceedings of the ACM Web Conference 2023*, 731-741, Austin, TX, USA, 2023. [workshop @ A* conference]
https://doi.org/10.1145/3543873.3587613

[LAL19] Li H, Armiento R, Lambrix P, Extending Ontologies in the Nanotechnology Domain using Topic Models and Formal Topical Concept Analysis on Unstructured Text, *ISWC 2019 Satellites - Proceedings of the ISWC 2019 Satellite Tracks (Posters & Demonstrations, Industry, and Outrageous Ideas) co-located with 18th International Semantic Web Conference (ISWC 2019)*, CEUR Workshop Proceedings Volume 2456, 5-8, Auckland, New Zealand, 2019. [poster @ A conference]
https://ceur-ws.org/Vol-2456/paper2.pdf

[LBL24] Li H, Blomqvist E, Lambrix P, Initial and Experimental Ontology Alignment Results in the Circular Economy Domain, *2nd International Workshop on Knowledge Graphs for Sustainability - KG4S 2024*, CEUR Workshop Proceedings Volume 3753, 79-85, Hersonissos, Greece, 2024.

[LHAL23b] Li H, Hartig O, Armiento R, Lambrix P, OBG-gen: Ontology-Based GraphQL Server Generation for Data Integration, *ISWC 2023 Posters, Demos and Industry Tracks: From Novel Ideas to Industrial Practice co-located with 22nd International Semantic Web Conference (ISWC 2023)*, CEUR Workshop Proceedings Volume 3632, Athens, Greece, 2023. [demo @ A conference]
https://ceur-ws.org/Vol-3632/ISWC2023_paper_396.pdf

[LL24] Li H, Lambrix P, BadmintONTO: A Badminton Domain Ontology, *14th International Conference on Formal Ontology in Information Systems - Ontology Showcase Track*, Enschede, Netherlands, 2024.

[LWL24] Li H, Wang C, Lambrix P, Initial Development of an Ontology for the Semiconductor Domain – SemicONTO, *International Workshop on Semantic Materials Science*, 120-127, Amsterdam, The Netherlands, 2024.
https://ceur-ws.org/Vol-3760/paper12.pdf

[LL21] Li Y, Lambrix P, An approach for repairing incoherent ontologies, *Proceedings of the ISWC 2021 Posters, Demos and Industry Tracks:*

From Novel Ideas to Industrial Practice, CEUR Workshop Proceedings Volume 2980, Virtual conference, 2021. [poster @ A conference]
https://ceur-ws.org/Vol-2980/paper372.pdf

[LL23b] Li Y, Lambrix P, A System for Repairing EL Ontologies Using Weakening and Completing, *The Semantic Web: ESWC 2023 Satellite Events*, LNCS 13998, 101-105, Hersonissos, Greece, 2023. [demo @ A conference]
http://dx.doi.org/10.1007/978-3-031-43458-7_19

[LL23c] Li Y, Lambrix P, Repairing $\mathcal{EL}_\bot$ Ontologies using Debugging, Weakening and Completing (Extended abstract), *36th International Workshop on Description Logics*, CEUR Workshop Proceedings Volume 3515, Rhodes, Greece, 2023.

[LL23d] Li Y, Lambrix P, Repairing Networks of Ontologies using Weakening and Completing, *18th International Workshop on Ontology Matching - OM 2023*, CEUR Workshop Proceedings Volume 3591, 79-84, Athens, Greece, 2023. [workshop @ A conference]
https://ceur-ws.org/Vol-3591/om2023_STpaper4.pdf

[OAEI13] Cuenca Grau B, Dragisic Z, Eckert K, Euzenat J, Ferrara A, Granada R, Ivanova V, Jimenez-Ruiz E, Kempf A, Lambrix P, Nikolov A, Paulheim H, Ritze D, Scharffe F, Shvaiko P, Trojahn C, Zamazal O, Results of the Ontology Alignment Evaluation Initiative 2013, *International Workshop on Ontology Matching - OM 2013*, CEUR Workshop Proceedings Volume 1111, 61 - 100, Sydney, Australia, 2013. [workshop @ A conference]
http://ceur-ws.org/Vol-1111/oaei13_paper0.pdf

[OAEI14] Dragisic Z, Eckert K, Euzenat J, Faria D, Ferrara A, Granada R, Ivanova V, Jimenez-Ruiz E, Kempf A, Lambrix P, Montanelli S, Paulheim H, Ritze D, Shvaiko P, Solimando A, Trojahn C, Zamazal O, Cuenca Grau B, Results of the Ontology Alignment Evaluation Initiative 2014, *International Workshop on Ontology Matching - OM 2014*, CEUR Workshop Proceedings Volume 1317, 61-104, Riva del Garda, Trentino, Italy, 2014. [workshop @ A conference]
http://ceur-ws.org/Vol-1317/oaei14_paper0.pdf

[OAEI15] Cheatham M, Dragisic Z, Euzenat J, Faria D, Ferrara A, Flouris G, Fundulaki I, Granada R, Ivanova V, Jiménez-Ruiz E, Lambrix P, Montanelli S, Pesquita C, Saveta T, Shvaiko P, Solimando A, Trojahn

C, Zamazal O, Results of the Ontology Alignment Evaluation Initiative 2015, *International Workshop on Ontology Matching - OM 2015*, CEUR Workshop Proceedings Volume 1545, 60-115, Bethlehem, PA, USA, 2015. [workshop @ A conference]
`http://ceur-ws.org/Vol-1545/oaei15_paper0.pdf`

[OAEI16] Achichi M, Cheatham M, Dragisic Z, Euzenat J, Faria D, Ferrara A, Flouris G, Fundulaki I, Harrow I, Ivanova V, Jimenez-Ruiz E, Kuss E, Lambrix P, Leopold H, Li H, Meilicke C, Montanelli S, Pesquita C, Saveta T, Shvaiko P, Splendiani A, Stuckenschmidt H, Todorov K, Trojahn C, Zamazal O, Results of the Ontology Alignment Evaluation Initiative 2016, *International Workshop on Ontology Matching - OM 2016*, CEUR Workshop Proceedings Volume 1766, 73-129, Kobe, Japan, 2016. [workshop @ A conference]
`http://ceur-ws.org/Vol-1766/oaei16_paper0.pdf`

[OAEI17] Achichi M, Cheatham M, Dragisic Z, Euzenat J, Faria D, Ferrara A, Flouris G, Fundulaki I, Harrow I, Ivanova V, Jimenez-Ruiz E, Kolthoff K, Kuss E, Lambrix P, Leopold H, Li H, Meilicke C, Mohammadi M, Montanelli S, Pesquita C, Saveta T, Shvaiko P, Splendiani A, Stuckenschmidt H, Thieblin E, Todorov K, Trojahn C, Zamazal O, Results of the Ontology Alignment Evaluation Initiative 2017, *International Workshop on Ontology Matching - OM 2017*, CEUR Workshop Proceedings Volume 2032, 61-113, Vienna, Austria, 2017. [workshop @ A conference]
`http://ceur-ws.org/Vol-2032/oaei17_paper0.pdf`

[OAEI17.5] Jimenez-Ruiz E, Saveta T, Zamazal O, Hertling S, Röder M, Fundulaki I, Ngonga Ngomo A, Sherif M, Annane A, Bellahsene Z, Ben Yahia S, Diallo G, Faria D, Kachroudi M, Khiat A, Lambrix P, Li H, Mackeprang M, Mohammadi M, Rybinski M, Sowkarthiga Balasubramani B, Trojahn C, Introducing the HOBBIT platform into the Ontology Alignment Evaluation Campaign, *International Workshop on Ontology Matching - OM 2018*, CEUR Workshop Proceedings Volume 2288, 49-60, Monterey, CA, USA, 2018. [workshop @ A conference]
`http://ceur-ws.org/Vol-2288/om2018_LTpaper5.pdf`

[OAEI18] Algergawy A, Cheatham M, Faria D, Ferrara A, Fundulaki I, Harrow I, Hertling S, Jimenez-Ruiz E, Karam N, Khiat A, Lambrix P, Li H, Montanelli S, Paulheim H, Pesquita C, Saveta T, Schmidt D, Shvaiko P, Splendiani A, Thieblin E, Trojahn S, Vatascinova J, Zamazal

O, Zhou L, Results of the Ontology Alignment Evaluation Initiative 2018, *International Workshop on Ontology Matching - OM 2018*, CEUR Workshop Proceedings Volume 2288, 76-116, Monterey, CA, USA, 2018. [workshop @ A conference]
`http://ceur-ws.org/Vol-2288/oaei18_paper0.pdf`

[OAEI19] Algergawy A, Faria D, Ferrara A, Fundulaki I, Harrow I, Hertling S, Jimenez-Ruiz E, Karam N, Khiat A, Lambrix P, Li H, Montanelli S, Paulheim H, Pesquita C, Saveta T, Shvaiko P, Splendiani A, Thieblin E, Trojahn C, Vatascinova J, Zamazal O, Zhou L, Results of the Ontology Alignment Evaluation Initiative 2019, *International Workshop on Ontology Matching - OM 2019*, CEUR Workshop Proceedings Volume 2536, 46-85, Auckland, New Zealand, 2019. [workshop @ A conference]
`http://ceur-ws.org/Vol-2536/oaei19_paper0.pdf`

[OAEI20] Abd Nikooie Pour M, Algergawy A, Amini R, Faria D, Fundulaki I, Harrow I, Hertling S, Jimenez-Ruiz E, Jonquet C, Karam N, Khiat A, Laadhar A, Lambrix P, Li H, Li Y, Hitzler P, Paulheim H, Pesquita C, Saveta T, Shvaiko P, Splendiani A, Thieblin E, Trojahn C, Vatascinová J, Yaman B, Zamazal O, Zhou L, Results of the Ontology Alignment Evaluation Initiative 2020, *15th International Workshop on Ontology Matching - OM 2020*, CEUR Workshop Proceedings Volume 2788, 92-138, Virtual conference (originally planned to be in Athens, Greece), 2020. [workshop @ A conference]
`http://ceur-ws.org/Vol-2788/oaei20_paper0.pdf`

[OAEI21] Abd Nikooie Pour M, Algergawy A, Amardeilh F, Amini R, Fallatah O, Faria D, Fundulaki I, Harrow I, Hertling S, Hitzler P, Huschka M, Ibanescu L, Jimenez-Ruiz E, Karam N, Laadhar A, Lambrix P, Li H, Li Y, Michel F, Nasr E, Paulheim H, Pesquita C, Portisch J, Roussey C, Saveta T, Shvaiko P, Splendiani A, Trojahn C, Vatascinova J, Yaman B, Zamazal O, Zhou L, Results of the Ontology Alignment Evaluation Initiative 2021, *16th International Workshop on Ontology Matching - OM 2021*, CEUR Workshop Proceedings Volume 3063, 62-108, Virtual conference, 2021. [workshop @ A conference]
`http://ceur-ws.org/Vol-3063/oaei21_paper0.pdf`

[OAEI22] Abd Nikooie Pour M, Algergawy A, Buche P, Castro L, Chen J, Dong H, Fallatah O, Faria D, Fundulaki I, Hertling S, He Y, Horrocks I, Huschka M, Ibanescu L, Jimenez-Ruiz E, Karam N, Laadhar A, Lambrix P, Li H, Li Y, Michel F, Nasr E, Paulheim H, Pesquita C, Saveta

T, Shvaiko P, Trojahn C, Verhey C, Wu M, Yaman B, Zamazal O, Zhou L, Results of the Ontology Alignment Evaluation Initiative 2022, *17th International Workshop on Ontology Matching - OM 2022*, CEUR Workshop Proceedings Volume 3324, 84-128, Virtual conference, 2022. [workshop @ A conference]
`http://ceur-ws.org/Vol-3324/oaei22_paper0.pdf`

[OAEI23] Abd Nikooie Pour M, Algergawy A, Buche P, Castro LJ, Chen J, Coulet A, Cufi J, Dong H, Fallatah O, Faria D, Fundulaki I, Hertling S, He Y, Horrocks I, Huschka M, Ibanescu L, Jain S, Jiménez-Ruiz E, Karam N, Lambrix P, Li H, Li Y, Monnin P, Nasr E, Paulheim H, Pesquita C, Saveta T, Shvaiko P, Sousa G, Trojahn C, Vatascinova J, Wu M, Yaman B, Zamazal O, Zhou L, Results of the Ontology Alignment Evaluation Initiative 2023, *18th International Workshop on Ontology Matching - OM 2023*, CEUR Workshop Proceedings Volume 3591, 97-139, Athens, Greece, 2023. [workshop @ A conference]
`https://ceur-ws.org/Vol-3591/oaei23_paper0.pdf`

[PLK95] Padgham L, Lambrix P, Kalmelid S, Integrating a Description Logic System and an Object-Centered Database System, *International KRUSE Symposium - Knowledge Retrieval, Use and Storage for Efficiency*, 40-48, Santa Cruz, California, USA, 1995.

[TL07b] Tan H, Lambrix P, SAMBO results for the Ontology Alignment Evaluation Initiative 2007, *Second International Workshop on Ontology Matching*, 236-243, Busan, Korea, 2007. [workshop @ A conference]
`https://ceur-ws.org/Vol-304/paper21.pdf`

[TL09] Tan H, Lambrix P, Selecting an Ontology for Biomedical Text Mining, *Workshop on BioNLP*, 55-62, Boulder, Colorado, USA, 2009.
`http://www.aclweb.org/anthology/W/W09/W09-1307.pdf`, `https://dl.acm.org/doi/10.5555/1572364.1572372`

[**Conference Abstracts**]

[Ba04] Backofen R, Badea M, Barahona P, Badea L, Bry F, Dawelbait G, Doms A, Fages F, Goble C, Henschel A, Hotaran A, Huang B, Krippahl L, Lambrix P, Nutt W, Schroeder M, Soliman S, Will S, Towards a Semantic Web for Bioinformatics, *Poster at Bioinformatics 2004*, p 26, Linköping, Sweden, 2004.

[JL02] Jakonienė V, Lambrix P, Monitoring performance and access to biological databases, *Poster at the Third Swedish Annual Workshop in Bioinformatics for PhD students and PostDocs*, p 17, 2002.

[JL04] Jakonienė V, Lambrix P, Implementation of a System for Integrated Access to Biological Data Sources, *Poster at Bioinformatics 2004*, p 44, Linköping, Sweden, 2004.

[JL06] Jakoniene V, Lambrix P, A tool for evaluating strategies for grouping of biological data, *Seventh Swedish Bioinformatics Workshop for PhD students and PostDocs*, 23-24, Stockholm, Sweden, 2006.

[Lam01b] Lambrix P, A Query Language and Architecture for Querying Multiple Biological Databanks, *Poster at Bioinformatics 2001*, p 24, Skövde, Sweden, 2001.

[Lam01c] Lambrix P, Querying Multiple Biological Databanks, *Poster at the 9th International Conference on Intelligent Systems for Molecular Biology - ISMB01*, 64, Copenhagen, Denmark, 2001.

[LJ01] Lambrix P, Jakonienė V, Lessons learned from the analysis of characteristics of biological databanks, *Poster at the Second Annual National Workshop for PhD students and PostDocs in Bioinformatics in Sweden*, p 9, 2001.

[LJ02] Lambrix P, Jakonienė V, A databank knowledge base for the integration of biological databanks, *Poster at Bioinformatics 2002*, p 62, Bergen, Norway, 2002.

[LT03] Lambrix P, Tan H, A semi-automatic tool for merging bio-ontologies, *Poster at the Fourth Swedish Bioinformatics Workshop for PhD students and PostDocs*, Linköping, 18-19, Sweden, 2003.

[LT04] Lambrix P, Tan H, A Semi-Automatic Tool for Merging Bio-Ontologies, *Poster at Bioinformatics 2004*, p 55, Linköping, Sweden, 2004.

[LT07b] Lambrix P, Tan H, Aligning biomedical ontologies, *Poster at the 4th Integrative Bioinformatics Workshop*, Gent, Belgium, 2007.

[SÅL00] Shahmehri N, Åberg J, Lambrix P, Projects as a means for subject learning and personal development under student responsibility, *Second International Conference on Problem-based Learning in Higher Education*, 66, Linköping, Sweden, 2000.

[TL06] Tan H, Lambrix P, Aligning and merging biomedical ontologies, *Seventh Swedish Bioinformatics Workshop for PhD students and PostDocs*, 18, Stockholm, Sweden, 2006.

[TL09b] Tan H, Lambrix P, Selecting an Ontology for Biomedical Text Mining, Poster at *the 17th Conference on Intelligent Systems for Molecular Biology*, ISMB-2009, Stockholm, Sweden, 2009.

[**Project Deliverables**]

[REWERSE-A2-D1] Backofen R, Badea M, Burger A, Fages F, Lambrix P, Nutt W, Schroeder M, Soliman S, Will S, State-of-the-art in Bioinformatics, REWERSE Deliverable A2-D1, 2004. (Reviewers: Lambrix, P., Furche, T.)

[REWERSE-A2-D2] Backofen R, Badea M, Barahona P, Burger A, Dawelbait G, Doms A, Fages F, Hotaran A, Jakonienė V, Krippahl L, Lambrix P, McLeod K, Möller S, Nutt W, Olsson B, Schroeder M, Soliman S, Tan H, Tilivea D, Will S, Usage of bioinformatics tools and identification of information sources, REWERSE Deliverable A2-D2, 2005.

[REWERSE-A2-D3] Backofen R, Badea M, Barahona P, Berndtsson M, Burger A, Dawelbait G, Doms A, Fages F, Hotaran A, Jakoniene V, Krippahl L, Lambrix P, McLeod K, Nutt W, Olsson B, Schroeder M, Schroiff A, Soliman S, Tan H, Tilivea D, Will S, Requirements and specification of use cases, REWERSE Deliverable A2-D3, 2005.

[REWERSE-A2-D4] Dawelbait G, Doms A, Lambrix P, Royer L, Schroeder M, Bioinformatics Demonstrators, REWERSE Deliverable A2-D4, 2006.

[REWERSE-A2-D6] Backofen R, Burger A, Busch A, Dawelbait G, Fages F, Jakoniene V, Lambrix P, McLeod K, Soliman S, Tan H, Will S, Implementation of prototypes, REWERSE Deliverable A2-D6, 2007.

[Lam98] Lambrix P, Integration of Psychology, Economy and Information Technology, NyIng rapport 6, LiTH-ISY-R-2078, Linköping University, 1998.

[**Graduate and Undergraduate Theses**]

[Lam88] Lambrix P, *Symmetrieën in Contact Meetkunde* (Symmetries in contact geometry), M.Sc. Thesis, Katholieke Universiteit Leuven, Department of Mathematics, 1988 - in Dutch.

[Lam90] Lambrix P, *Een Planner voor een Autonome Agent* (A planner for an autonomous agent), M.Sc. Thesis, Katholieke Universiteit Leuven, Department of Computer Science, 1990 - in Dutch.

[Lam92d] Lambrix P, *Aspects of Version Management of Composite Objects*, Lic. Thesis 328, Department of Computer and Information Science, Linköping University, 1992.

[Lam96] Lambrix P, *Part-Whole Reasoning in Description Logics*, Ph.D. Thesis 448, Department of Computer and Information Science, Linköping University, 1996.

[**Selected research related work under my supervision**]

[Dra14] Dragisic Z, *Completing the Is-a Structure in Description Logics Ontologies*, Lic. Thesis 1683, Department of Computer and Information Science, Linköping University, 2014.

[Dra17] Dragisic Z, *Completion of Ontologies and Ontology Networks*, Ph.D. Thesis 1852, Department of Computer and Information Science, Linköping University, 2017.

[Iva14] Ivanova V, *Integration of Ontology Alignment and Ontology Debugging for Taxonomy Networks*, Lic. Thesis 1644, Department of Computer and Information Science, Linköping University, 2014.

[Iva17] Ivanova V, *Fostering User Involvement in Ontology Alignment and Alignment Evaluation*, Ph.D. Thesis 1891, Department of Computer and Information Science, Linköping University, 2017 (defended 2018).

[Jak05] Jakonienė V, *A Study in Integrating Multiple Biological Data Sources*, Lic. Thesis 1149, Department of Computer and Information Science, Linköping University, 2005.

[Jak06] Jakonienė V, *Integration of Biological Data*, Ph.D. Thesis 1035, Department of Computer and Information Science, Linköping University, 2006.

[Li22] Li H, *Ontology-Driven Data Access and Data Integration with an Application in the Materials Design Domain*, Ph.D. Thesis 2218, Department of Computer and Information Science, Linköping University, 2022.

[Liu11] Liu Q, *Dealing with Missing Mappings and Structure in a Network of Ontologies*, Lic. Thesis 1468, Department of Computer and Information Science, Linköping University, 2011.

[Tan06] Tan H, *Aligning and Merging Biomedical Ontologies*, Lic. Thesis 1225, Department of Computer and Information Science, Linköping University, 2006.

[Tan07] Tan H, *Aligning Biomedical Ontologies*, Ph.D. Thesis 1110, Department of Computer and Information Science, Linköping University, 2007.

[Wah96] Wahllöf N, *A Default Extension to Description Logics and its Applications*, Lic. Thesis 591, Department of Computer and Information Science, Linköping University, 1996.

[Selected research related work under my supervision - MSc level]

[Run06] Rundqvist D, *Grouping biological data*, Undergraduate thesis, Department of Computer and Information Science, Linköping University, 2006. LITH-IDA-EX–06/029–SE.
Best Undergraduate Thesis Award 2006 at the Department of Computer and Information Science, Linköping University.

[Edb02] Edberg A, *Förening av ontologier inom bioinformatik*, M.Sc. Thesis, Department of Computer and Information Science, Linköping University, Linköping, 2002. LiTH-IDA-Ex-02/62.
Best Undergraduate Thesis Award 2002 at the Department of Computer and Information Science, Linköping University.

[Jac97] Jacobsen S, *A Hybrid System for Knowledge-Based Information Retrieval*, M.Sc. Thesis, Department of Computer and Information Science, Linköping University, Linköping, 1997. LiTH-IDA-Ex-97/59.
Best Undergraduate Thesis Award 1997 at the Department of Computer and Information Science, Linköping University.

[**Other work referenced in this annotated bibliography**]

[Ar*96] Artale A, Franconi E, Guarino N, Pazzi L, Part-Whole Relations in Object-Centered Systems: An Overview, *Data and Knowledge Engineering*, Vol 20(3), 347-383, 1996.

[CJW95] Cao Y, Jung B, Wachsmuth I, Situated Verbal Interaction in Virtual Design and Assembly, *Video Presentation at the International Joint Conference on Artificial Intelligence - IJCAI95*, 1995.

[DeR91] De Raedt L, *Interactive Concept-Learning*, Ph.D. Thesis, Department of Computer Science, Katholieke Universiteit Leuven, 1991.

[DeR92] De Raedt L, *Interactive Theory Revision: an Inductive Logic Programming Approach*, Academic Press, 1992.

[KW04] Knowledge Web, Network of Excellence, State of the art on the scalability of ontology-based technology, Deliverable D2.1.1, 2004. `http://knowledgeweb.semanticweb.org/`

[SE13] Shvaiko P, Euzenat J, Ontology matching: state of the art and future challenges, *IEEE Transactions on Knowledge and Data Engineering*, 25(1):158-176, 2013.

[WJ96] Wachsmuth I, Jung B, Dynamic Conceptualization in a Mechanical-Object Assembly Environment, *Artificial Intelligence Review*, 10(3-4):345-368, 1996.