

CURRICULUM VITAE

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I am a Computer Scientist, scouting for, and developing new theoretical insights, devising implementation methods for them and making them work for real world applications. My current research aims at providing non-technical users with new types of information systems implementing self-service access to distributed and heterogeneous data, by developing new methods for semantic data management with Web services.

SUMMARY

RESEARCH

- ▷ Semantic data management for Bioinformatics and Clinical Intelligence.
- ▷ Algorithms for querying automatically discoverable Web services.
- ▷ Intelligent User Interfaces for self-service ad hoc querying.
- ▷ Biomedical Information Extraction.
- ▷ Reasoning-based Query Rewriting methods.
- ▷ Practical Commonsense Reasoning for Natural Language Understanding.
- ▷ Algorithms and datastructures for Automated Reasoning.

EXPERIENCE

CO-FOUNDER AND CTO, IPSNP COMPUTING INC, Canada, since 2012. Leading the R&D team on the development of a semantic Web service-based data integration technology for Bioinformatics and Clinical Intelligence. Research and technical management, and business development.

SCIENTIFIC ADVISOR, THINK DIRTY INC, Canada, since March 2015. Cosmetics product health hazards data integration.

SENIOR RESEARCH SCIENTIST, UNIV. OF NEW BRUNSWICK, Canada, Mar-Sep 2015. Consulting on cosmetics product data integration.

SENIOR RESEARCH SCIENTIST, UNIV. OF NEW BRUNSWICK, Canada, 2010-2012. Bioinformatics and Clinical Intelligence data integration

case studies. Supervision of day-to-day work of a research team, and technical leadership.

R&D ENGINEER, NORTH SIDE INC, Canada, 2005-2010. Research on practical methods for Commonsense Reasoning and Semantic Modelling for Natural Language Understanding.

RESEARCH ASSOCIATE, MANCHESTER UNIVERSITY, UK, 2002-2005. Research on efficient Automated Reasoning techniques. Implementing the world-leading theorem prover Vampire.

VISITING RESEARCHER, UPPSALA UNIVERSITY, Sweden, 1998-1999. Research on efficient Automated Reasoning techniques. Initial implementation of the Vampire theorem prover.

DOCTORAL STUDENT, A. P. ERSHOV INSTITUTE OF INFORMATICS SYSTEMS, Russia, 1995-1998. Research on integration of heterogeneous deductive software components.

LECTURER (ASSISTANT PROF.), SHADRINSK PEDAGOGICAL INST., Russia, 1992-1995. Teaching undergraduate courses in Programming and Numerical Analysis. Student project supervision.

EDUCATION

MANCHESTER UNIVERSITY, UK, Ph.D. in Computer Science, 1992-2002.

NOVOSIBIRSK STATE UNIVERSITY, Russia, Applied Math B.Sc. and research training in Computer Science, 1988-1992.

PUBLICATIONS

From 9 years of academic research:

- ▷ 11 journal articles and book chapters.
- ▷ 21 refereed conference papers.
- ▷ Google Scholar citation indexes of three most cited publications: 444, 127 and 87.
- ▷ Several invited talks at international and Canadian events.

TEACHING AND TRAINING EXPERIENCE

2010-2012: preparing and teaching courses for academic and industrial audiences (Description Logics, Automated Reasoning, Web Services).

2010-2014: multiple guest and replacement lectures at the University of New Brunswick (Semantic Technologies, Web Services, Web Science).

2006-2010: trained several new PhD and MSc-level hires at North Side Inc (Computational Semantics, Knowledge Representation and Reasoning).

1999-2005: teaching assistant at The University of Manchester (Programming Labs, replacement lectures in Computational Logic and Functional Programming).

1993-1995: intensive university-level teaching, course development and student project supervision (Programming, Numerical Analysis) in Shadrinsk Pedagogical Institute.

SUPERVISION AND HIRING EXPERIENCE

2012-present: supervising IPSNP's technical team (4 researchers).

2012-2014: hiring researchers and engineers for IPSNP Computing Inc (> 20 interviews).

2010-2012: providing technical leadership to a research team at the University of New Brunswick (3 researchers).

SOFTWARE PROJECTS

2015: cosmetics product data integration framework.

2014-2015: special-purpose financial informa-

tion extraction system.

2014-2015: bioinformatics and clinical intelligence case studies and pilots with automatically discoverable semantic Web services.

2013-2015: intelligent GUI for semantic querying.

2012-2015: scalable reasoning-enabled query engine HYDRA for discoverable Web services.

2010-2013: semantic Web services for biomedical databases, bioinformatics algorithms and clinical data.

2008-2010: reasoning-enabled querying of Relational Databases and RDF triplestores.

2005-2010: commonsense reasoning and semantic analysis components of an NLP toolkit.

1998-2005: automatic theorem prover Vampire (winner of multiple international prizes).

1995-1998: a system for integrating heterogeneous deductive components ("workflow composition system", in the modern terminology).

RESEARCH COMMERCIALISATION AND INDUSTRY EXPERIENCE

▷ Co-founder and Chief Technical Officer of IPSNP Computing Inc.

▷ In total, over 8 years of industry research experience.

PROFESSIONAL SERVICE

▷ Programme committees of 8 international workshops and conferences.

▷ Dozens of reviewed conference papers and journal articles in Automated Reasoning, Artificial Intelligence and Bioinformatics.

PERSONALIA

▷ Date of birth: June 12, 1971.

▷ Nationality: Russian and Canadian.

▷ Languages: Russian (native) and English (fluent).

▷ Family status: married, 2 children.

RESEARCH PROFILE

I am a Computer Scientist combining extensive academic research experience with industrial research, R&D and research commercialisation experience. My favourite strategy for academic research is to develop *original software tools based on deep theoretical insights*, and build more research projects *around the tools*, dedicated to either improving the underlying methods or validating them in applications. My current research represents a fair proportion of *fundamental research* in reasoning-based algorithms, experimental *system development* and *validation*, mostly in Life Science and Clinical Research scenarios. The applied nature of my research also opens possibilities for commercialisation, e.g., in the form of consulting, and other kinds of collaboration with industry and healthcare.

My specific research efforts are concentrated on several core problems from the area of *semantic data management*. On the application side, my research aims at *providing non-technical users with scalable self-service access to data*, typically distributed and heterogeneous. Semantic technologies, based on semantic data standards and automated reasoning, alleviate many data access-related challenges faced by biologists and clinicians, such as data fragmentation, necessity to combine data with computation and declarative knowledge in querying, and the difficulty of accessing data for non-technical users.

The specific work directions include:

▷ Case studies on the application of semantic technologies, especially semantic data federation and self-service ad hoc querying, in *Bioinformatics* [5,6,12,19], *Cheminformatics* [4] and *Clinical Research Informatics* [2,3,13,18,20] scenarios, to validate various semantic technologies and iden-

tify new practically relevant research problems.

▷ Intelligent multi-modal user interfaces for *self-service access to, and manipulation of semantic data* by non-technical users – scientists, doctors, non-IT engineers, analysts, students, managers, etc.

▷ Efficient methods for reasoning-enabled querying of distributed heterogeneous data and algorithms, with automatically discoverable Web services and plugins.

▷ Fundamental and experimental research on *efficient algorithms for reasoning-enabled querying of semantic data*, in particular, query rewriting techniques [7,21] for semantic querying with ontologies and rules.

In the foreseeable future, I also would like to work on scalable methods for SPARQL endpoint federation and reasoning-enabled Linked Data querying, and their applications in information systems.

The research component of my current work as the Chief Technical Officer of IPSNP Computing Inc is dedicated to the development of *scalable methods for reasoning-enabled orchestration of Web services*, and research on *semantic query composition interfaces and underlying algorithms*. It resulted in the development of the HYDRA query engine¹ and graphical query composition tool² for SADI Web services. Among other valuable experiences, this work provides me with intimate knowledge of the problems associated with efficient implementation of reasoning-based data federation with discoverable semantic Web services. We have also conducted a number of case studies with clinicians and biologists as a validation for our technology.

¹See, e.g., <http://www.freewebs.com/riazanov/LifeScienceRnDBigDataLeadersForum2014.pdf>, presented at the 2nd Annual Life Science RnD Big Data Leaders Forum, Berlin, Germany, 2014.

²See, e.g., <http://www.freewebs.com/riazanov/CambridgeSemanticWebMeetup.pdf>, presented at Cambridge Semantic Web Monthly Meetup, MIT, Cambridge MA, US, 2014.

My work at IPSNP Computing builds on a prior project in Prof Chris Baker's lab at the University of New Brunswick, dedicated to studying the utility of semantic Web services (SADI) for data and algorithm integration tasks associated with several Bioinformatics [5,6,12,19], Cheminformatics [4] and Clinical Intelligence [2,3,13,18,20] applications. My role within the project was to provide technical leadership to the research team and supervise the day-to-day work. Our specific research activities included (1) defining *biomedical and clinical use cases* for semantic data federation with SADI, in collaboration with biologists and medical informatics experts, and (2) semantic modelling for, and implementation of SADI services for multiple *biomedical databases, nomenclatures and algorithms*, to implement the use cases. This work allowed me to accumulate considerable knowledge of the data integration and, in general, data access needs of life scientists and certain categories of clinicians, and assess the potential of discoverable semantic Web service frameworks for such applications. I am now also continuing to acquire such knowledge as a scientific advisor to ThinkDirty Inc – a company specialising in health hazards associated with cosmetics products.

Prior to the work on semantic Web services, I was working for North Side Inc, Montreal, developing practical methods for *Commonsense Reasoning, Computational Semantics and Knowledge Representation*, targeting *Natural Language Understanding* applications.

Simultaneously, I was working on *reasoning-enabled Query Rewriting methods and new foundations for deductive databases*. This work resulted in the development of the *Incremental Query Rewriting* method [7,21], based on classical resolution reasoning. The immediate practical applications of Incremental Query Rewriting include semantic querying of Relational Databases and expressive reasoning-enabled querying of RDF triplestores. The

method can be also considered an alternative theoretical foundation for Deductive Databases and Logic Programming.

In the past I have also done a lot of research in efficient *Algorithms and Datastructures for Automated Reasoning*, which is still one of my main areas of expertise. As the experimental part of this work, I developed the high-performance theorem prover Vampire (see, e.g., [10,32]), which has won multiple prizes being *one of the strongest theorem provers in the world* for more than a decade³.

CAREER AND EDUCATION

In **August 2011**, I and Prof Chris Baker founded **IPSNP Computing Inc** – a startup dedicated to commercialising some prior research on data integration and business intelligence (ad hoc querying) with SADI semantic Web services. As the **Chief Technical Officer**, I am leading and managing the R&D activities on the development of our core products – the HYDRA SPARQL engine for data federation and a semantic query composition interface. The research component of this work is focused on the development of algorithms for SADI service orchestration and automatic SPARQL generation from Natural Language queries. To validate our technology, we are also conducting case studies with biologists and clinicians. The specific projects include an infrastructure for flexible literature search combined with Information Extraction for experiment data in aquatic toxicology, associated with oil production, and a US hospital-based clinical intelligence pilot dedicated to improving infections surveillance. We have also performed a consulting contract on solving a practically-relevant information extraction problem from the *financial analysis* domain.

My management and business development activities at IPSNP include R&D team management, technical hiring, funding proposals and in-

³<http://www.cs.miami.edu/~tptp/CASC/>

vestor pitching, business planning, project planning and budgeting, business and technical presentations, and technical liaisoning with clients.

Since **March 2015**, I am also a **Senior Research Scientist** at the **University of New Brunswick**, and a **Scientific Advisor** for **Think Dirty Inc** – a Toronto-based company providing consumers with scientifically-founded information on health hazards associated with cosmetics and household chemistry products. This industry consulting work is focused on solving challenging data integration tasks associated with the company’s goals.

In **2010-2012** I worked in Prof Chris Baker’s group in the **University of New Brunswick**, Saint John, as a **Senior Research Scientist** supervising day-to-day work of, and providing technical leadership to a team of researchers exploring the value of Semantic Web services, in particular SADI framework, for the purposes of agile integration of distributed, heterogeneous and autonomous bioinformatics resources, and agile analysis of clinical data. Our goal was to develop transferable methodologies for such tasks in practical settings, and to identify directions for further development of Semantic Web services and related infrastructure. To this end, we conducted several large coherent case studies, including (1) a project in which information about *mutations* mined from scientific publications was used in combination with several external bioinformatics databases and programs [1,5,6,14,15], to facilitate several biological research-motivated use scenarios; (2) an experiment in agile integration of cheminformatics algorithms for the purposes of *lipid molecule classification* and annotation based on online biomedical databases and publications [4]; (3) a case study dedicated to interpretation of *ecotoxicology experiment data* through integration of multiple biological sequence processing algorithms and online data on biological molecules and experiments [12,19]; and (4) a Clinical Intelligence scenario study on the use of SADI for ad hoc querying of hospital data for the purposes of

hospital-acquired infections surveillance and research [2,3,13,18,20].

My duties also included technical supervision of research team members, and course preparation and teaching at training courses for SADI Semantic Web services.

In **2005-2010** I worked as an **R&D Engineer** for Montreal-based **North Side Inc** developing a technology for deep semantic analysis of factual English texts and support of interactive dialogues, and applying it to on-line game development. My main role in the project was the development and implementation of efficient *practical methods of Commonsense Reasoning* as applied to *Natural Language Understanding*. In the course of this work I conducted a number of research projects on semantic modelling of natural languages, related reasoning support, knowledge acquisition from lexical resources and logic-based knowledge representation formalisms suitable for semantic modelling of the English language. I implemented a number of experimental semantic analysis and reasoning systems in Java and C++. My day-to-day duties also included training new team members on issues related to Automated Reasoning, Knowledge Representation and Computational Semantics.

In **2002-2005** I was a **Research Associate** at **The University of Manchester**, UK, studying primarily efficient algorithms and datastructures for automated reasoning, and developing the resolution- and paramodulation-based kernel of the theorem prover Vampire (see [10,32] for an overview). This work, in particular, strengthened the position of Vampire as a world-leading prover. I also did several smaller projects jointly with colleagues from the UK and Europe, including (i) the creation of the testing and benchmarking framework COMPIT for term indexing [28], (ii) the implementation of the temporal theorem prover TeMP [23], based on the Vampire kernel, and (iii) a case study on using Vampire for reasoning with OWL ontologies (two biomedical ontologies were used) and SWRL rules [22].

In **1999-2002** I was a **PhD student** at **The University of Manchester**, UK, under the supervision of Prof Andrei Voronkov, and defended my thesis “Implementing an Efficient Theorem Prover” in 2003. The study was dedicated to several novel *efficient implementation techniques for resolution- and paramodulation-based automated theorem proving* and the architecture of the kernel of the theorem prover Vampire, developed as the main experimental vehicle for this research. At that time Vampire became one of the most efficient theorem provers in the world, as witnessed by its performance in the annual prover competitions CASC ⁴.



In **1998-1999** I was working as a **Visiting Researcher** in **Uppsala University**, Sweden, where I started my work on resolution-based reasoning and Vampire. This implementation proved very competitive as it won the main division in CASC in 1999, after only one year of development.

In **1995-1998** I was working on the design and implementation of a concurrent logic programming language intended for integration of heterogeneous deductive components (a *workflow composition system* in the modern terminology). This work was done as a part of a **PhD course** at the **Ershov's Institute of Informatics Systems**, Russia, which I left because of the op-

portunity to work on Vampire.

In **1988-1992** I got my first degree from **Novosibirsk State University**, Russia, which included an undergraduate study in Applied Math, and graduate courses and research training in Computer Science.

TEACHING AND TRAINING EXPERIENCE

My work on the SADI project at the University of New Brunswick, Canada, in 2010-2012, involved preparing and teaching of Description Logics, Automated Reasoning and Web Services modules at SADI training courses for academic and industrial audiences. In 2010-2014, I have also given multiple guest and replacement lectures in undergraduate Computer Science courses at the University of New Brunswick.

During my work at North Side Inc, in 2006-2010, I trained several new hires – all with advanced degrees in Computer Science and Math – on various issues related to Computational Semantics, Knowledge Representation and Commonsense Reasoning.

As a doctoral student, I worked as a teaching assistant at The University of Manchester, UK, providing students help with their programming lab assignments and marking exams on Computer Science courses. Later, as a Research Associate, I was also giving replacement lectures on Computational Logic and Functional Programming courses.

In 1993-1995 I did a lot of university-level teaching (up to 18 hours of class work per week, all year round) for undergraduate Mathematics, Physics and Informatics students in Shadrinsk State Pedagogical Institute, Russia. I prepared and taught several Programming courses for different levels, and an introductory Numerical Analysis course. The class work included lec-

⁴<http://www.cs.miami.edu/~tptp/CASC/>

tures, tutorials and lab demonstration. I also supervised the course and diploma work of several students and mentored a group of programming enthusiasts on a voluntary basis.

SOFTWARE DEVELOPMENT

I have been developing software for 27 years in many languages, on many platforms, including various flavours of Unix, Linux and MS Windows, using many different technologies. In particular, I have extensive experience in programming large systems with *extreme performance requirements, very complex data flows, sophisticated data structures and nontrivial memory management* in C++ (Vampire is fully implemented in this language) and Java. I have extensive experience in *parallelising complex algorithms*, such as reasoning algorithms, using *Java concurrency (multi-threading)* mechanisms, to achieve better performance on modern multi-core hardware. I also have practical experience with Web service-based *distributed computing*.

In the past I did a lot of programming in Lisp and Standard/Concurrent ML, and some programming in C and Prolog. Since my research interests require experimental work in the areas of databases, semantic technologies and Web services, I have a working knowledge of the key database and Web service technologies, and W3C standards. I have supervised several projects utilising Text Mining and Machine Learning.

KEY PROJECTS AND ROLES

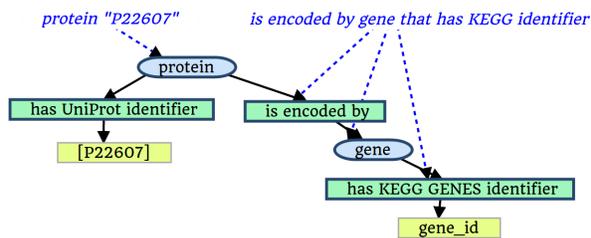
2015: COSMETICS PRODUCT DATA INTEGRATION FRAMEWORK, Univ. of New Brunswick, Technical and research lead. Within this industry consulting project, we studied data import and integration needs of our client – Think Dirty Inc, specialising in informing consumers

about health hazards associated with cosmetics and household chemistry products, defined an architecture for, and prototyped an extensible and scalable system for a key data import task.

2014-2015: FINANCIAL INFORMATION EXTRACTION, IPSNP Computing Inc, Technical and research lead. Within this project, we developed an approach for an Information Extraction problem for our client, and prototyped it.

2012-2015: BIOINFORMATICS AND CLINICAL INTELLIGENCE CASE STUDIES AND PILOTS, IPSNP Computing Inc, Technical and research lead. In these projects we have been working with early adopters of IPSNP HYDRA technology – two biology labs and a research department in a US hospital – to identify their data querying needs and implement them with SADI services, HYDRA and our query composition tool. The technical activities include semantic modelling of data and algorithm I/O, Web service implementation, implementation of use cases in the form of SPARQL queries and statistical analysis of results. The data sources and algorithms we have to deal with include a clinical research datawarehouse, gene expression experiment databases, functional gene annotation databases, multiple biological sequence-processing algorithms, several biomedical nomenclatures, text-mining programs, literature search Web services, etc.

2013-2015: INTELLIGENT GUI FOR SEMANTIC QUERYING, IPSNP Computing Inc, Research lead. I studied the problem of self-service ad hoc semantic query composition, defined an approach based on a combination of automatic keyword query interpretation and graphical query editing, and defined a special kind of data schemas extractable from semantic Web service descriptions, to support the proposed approach. Then I led IPSNP's R&D team in implementing the approach in a system consisting of a Web browser-based graphical editing GUI and a back-end automatic keyword query interpretation system.



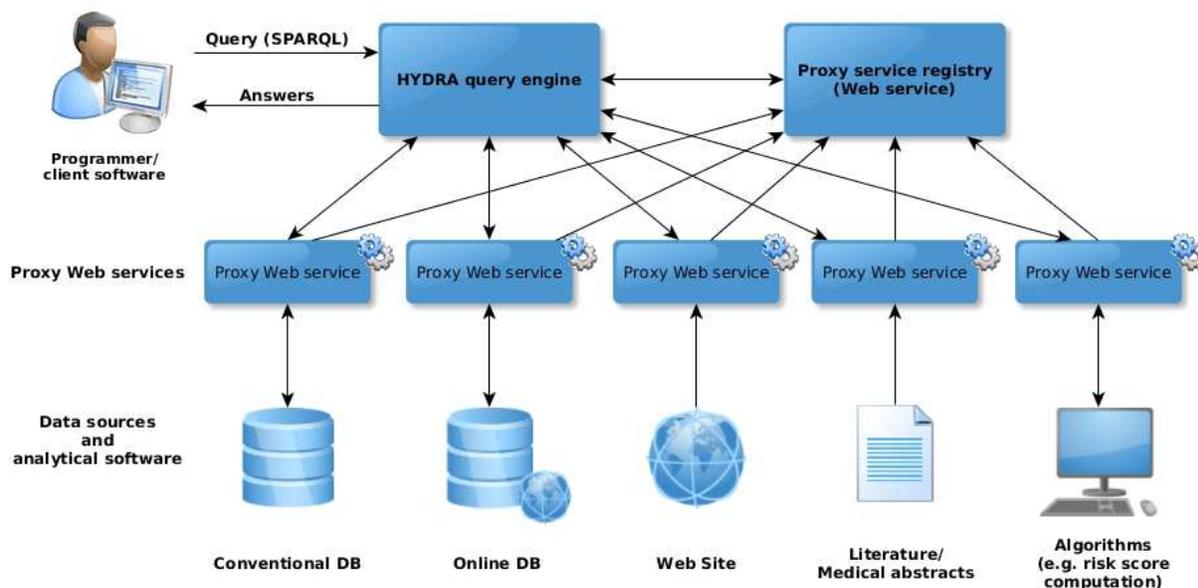
2012-2015: SCALABLE REASONING-ENABLED QUERY ENGINE HYDRA FOR DISCOVERABLE WEB SERVICES, IPSNP Computing Inc, Technical and research lead. I defined and prototyped an original scalable reasoning-based algorithm for execution of SPARQL queries over networks of automatically discoverable semantic Web services (SADI), and led IPSNP's R&D team to develop the system and prepare it for case studies and pilots.

2010-2013: SEMANTIC WEB SERVICES FOR BIOMEDICAL DATABASES, BIOINFORMATICS ALGORITHMS AND CLINICAL DATA, Univ. of New Brunswick, Technical lead. The goal of this large-scale project was to assess the utility of discoverable Web services (SADI) for federated semantic querying of online bioinformatics

databases and algorithms, and clinical data. We semantically modelled data from two dozens of sources, such as UniProt, KEGG, RefSeq, several algorithms on biological sequences and text-mining programs, etc., implemented SADI services to access the data and used them to execute federated queries expressing multiple bioinformatics and clinical research scenarios.

2008-2010: REASONING-ENABLED QUERYING OF RELATIONAL DATABASES AND RDF TRIPLESTORES, Private Project, Co-developer. This joint effort with Dr Marcelo A. T. Aragão (Manchester Univ. and Central Bank of Brazil) was based on my prior theoretical research on query rewriting with expressive reasoning. We implemented the Incremental Query Rewriting method I proposed earlier, in a prototype for semantic (deductive) querying of Relational Databases and SPARQL querying of RDF triplestores with very expressive reasoning.

2005-2010: COMMONSENSE REASONING AND SEMANTIC ANALYSIS COMPONENTS OF AN NLP TOOLKIT, North Side Inc, Autonomous developer. This work was done in the context of a Natural Language Understanding system



implementing Question Answering in English, developed by the company. I conducted research projects on a wide range of technical problems, including semantic modelling of natural languages, related reasoning support, especially practical methods for commonsense reasoning, knowledge acquisition from lexical resources and logic-based knowledge representation formalisms suitable for semantic modelling of the English language. I implemented a number of experimental semantic analysis and reasoning systems in Java and C++.

1998-2005: RESOLUTION-BASED KERNEL OF THE THEOREM PROVER VAMPIRE, Uppsala Univ. and Univ. of Manchester, Sole developer. This long-term large-scale research project was dedicated to the development of a next generation automatic reasoning system for First-Order Logic, based on new efficient algorithms and datastructures. Apart from the multiple published new implementation techniques, the tangible result of the project was the resolution- and paramodulation-based kernel of the theorem prover Vampire, that has been one of the strongest systems of its kind since 1999. To satisfy extreme performance requirements, the system was written in C++ and featured complex data and control flow, sophisticated data structures, nontrivial memory management, and powerful optimisations based on algorithm specialisation with embedded specialised virtual machines.

1995-1998: A SYSTEM FOR INTEGRATING HETEROGENEOUS DEDUCTIVE COMPONENTS, Ershov's Inst. of Informatics Syst., Sole developer. I designed and prototyped in Concurrent ML a concurrent logic programming language for composition of heterogeneous deductive components, such as solvers and reasoners. Conceptually it was similar to *workflow composition systems* widely used nowadays in Bioinformatics.

SELECTED PUBLICATIONS⁵

The list includes neither small abstracts, nor technical reports fully superseded by conference or journal publications.

JOURNAL ARTICLES AND BOOK CHAPTERS

- [1] A. Shaban-Nejad, H. Mamiya, A. Riazanov, A. J. Forster, C. J. O. Baker, R. Tamblyn, D. L. Buckeridge, *From Cues to Nudge: A Surveillance Framework for Monitoring Healthcare-associated Infections*, JOURNAL OF MEDICAL SYSTEMS 2015 (accepted).
- [2] A. Klein, A. Riazanov, M. M. Hindle, C. J. O. Baker, *Benchmarking Infrastructure for Mutation Text Mining*, JOURNAL OF BIOMEDICAL SEMANTICS, 5:11, 2014.
- [3] A. Riazanov, A. Klein, A. Shaban-Nejad, G. W. Rose, A. J. Forster, D. L. Buckeridge, C. J. O. Baker, *Semantic Querying of Relational Data for Clinical Intelligence: A Semantic Web Services-Based Approach*, JOURNAL OF BIOMEDICAL SEMANTICS, 4:9, 2013.
- [4] A. Shaban-Nejad, G. W. Rose, A. Okhmatovskaia, A. Riazanov, C. J. O. Baker, R. Tamblyn, A. J. Forster, D. L. Buckeridge, *Knowledge-based Surveillance for Preventing Postoperative Surgical Site Infections*, STUD. HEALTH TECHNOL. INFORM., vol 169, IOS Press, 2011.
- [5] L. L. Chepelev, A. Riazanov, A. Kouznetsov, H. S. Low, M. Dumontier, C. J. O. Baker, *Prototype Semantic Infrastructure for Automated Small Molecule Classification and Annotation in Lipidomics*, BMC BIOINFORMATICS 2011, 12(1):303, 2011.
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- [7] J. B. Laurila, N. Naderi, R. Witte, A. Riazanov, A. Kouznetsov and C. J. O. Baker, *Algorithms and Semantic Infrastructure for Mutation Impact Extraction and Grounding*, BMC GENOMICS, 11(Suppl 4):S24, 2010.
- [8] A. Riazanov and M. A. T. Aragão, *Incremental Query Rewriting with Resolution*, in CANADIAN SEMANTIC WEB II, 2010.
- [9] A. Riazanov and A. Voronkov, *Efficient Instance Retrieval with Standard and Relational Path Indexing*, INFORMATION AND COMPUTATION, 199:1-2, 2005.
- [10] A. Riazanov and A. Voronkov, *Limited Resource Strategy in Resolution Theorem Proving*, JOURNAL OF SYMBOLIC COMPUTATION, 36:1-2, 2003.
- [11] A. Riazanov and A. Voronkov, *The Design and Implementation of Vampire*, AI COMMUNICATIONS, 15:2-3, 2002.

⁵See also <http://www.freewebs.com/riazanov/publications.htm>.

REFEREED CONFERENCE PAPERS

- [12] M. S. Al Manir, A. Riazanov, H. Boley, C. J. O. Baker, *Generating Semantic Web Services from Declarative Descriptions*, CSWS, 2013.
- [13] A. Riazanov, M. M. Hindle, E. S. Goudreau, C. J. Martyniuk, C. J. O. Baker, *Ecotoxicology Data Federation with SADI Semantic Web Services*, SWAT4LS 2012.
- [14] A. Shaban-Nejad, A. Riazanov, K. M. Charland, G. W. Rose, C. J. O. Baker, R. Tamblyn, A. J. Forster, D. L. Buckeridge, *HAIKU: A Semantic Framework for Surveillance of Healthcare-Associated Infections*, PROCEEDIA COMPUTER SCIENCE, volume 10, 2012.
- [15] A. Klein, A. Riazanov, K. Al-Rababah, M. Vihiinen, C. Baker, *Towards a next generation protein mutation grounding system for full texts*, SMBM 2012, 2012.
- [16] A. Klein, A. Riazanov, M. M. Hindle, C. J. O. Baker, *Benchmarking infrastructure for mutation text mining*, AIMM2012, 2012.
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- [24] U. Hustadt and B. Konev and A. Riazanov and A. Voronkov, *TeMP: A Temporal Monodic Prover*, IJCAR 2004, LNAI 3097, 2004.
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CADE-19, LNAI 2741, 2003.

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- [28] A. Riazanov and A. Voronkov, *Splitting without Backtracking*, IJCAI-17, vol. 1, 2001.
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- [30] A. Riazanov and A. Voronkov, *Vampire 1.1 (System Description)*, IJCAR-1, LNAI 2083, 2001.
- [31] A. Riazanov and A. Voronkov, *Partially Adaptive Code Trees*, JELIA, LNAI 1919, 2000.
- [32] A. Riazanov and A. Voronkov, *Vampire*, CADE-16, LNAI 1632, 1999.

DOCTORAL THESIS

- [33] A. Riazanov, *Implementing an Efficient Theorem Prover*, PhD thesis, THE UNIVERSITY OF MANCHESTER, 2003⁶.

NOT REFEREED

- [34] A. Riazanov, *New Implementation Framework for Saturation-Based Reasoning*, ArXiv preprint arXiv:0802.2127, available from <http://arxiv.org/>, 2006.

As the CTO of IPSNP Computing Inc and a core developer of several software systems, I have also written a significant number of business documents, funding proposals, technical reports and technical software descriptions.

PRESENTATIONS AND TUTORIALS

- *Comprehensive Self-Service Life Science Data Federation with SADI semantic Web services and HYDRA*, research seminar, University of Oslo, Norway, 2015.
- *A practical introduction to SADI semantic Web services and HYDRA query tool*, research seminar, University of Oslo, Norway, 2015.
- *HYDRA – a SPARQL engine for data federation and self-service querying in the Life Sciences*, 9TH INTERNATIONAL CONFERENCE ON DATA INTEGRATION IN LIFE SCIENCES (DILS'13), Montreal, Canada, 2013.
- *Semantic Querying of Relational Data for Clinical Intelligence With SADI*, ATLANTIC WORKSHOP ON SEMANTICS AND SERVICES (AWOSS 12), Halifax, Canada, 2012.
- *Knowledge Representation and Reasoning*, WEB PUBLISHING OF SCIENTIFIC DATA AND SERVICES TRAINING

⁶Available as http://riazanov.webs.com/Riazanov_PhD_thesis.pdf

COURSE, Vancouver, Canada, 2011.

- *Web Services*, WEB PUBLISHING OF SCIENTIFIC DATA AND SERVICES TRAINING COURSE, Fredericton, Canada, 2011.
- *Knowledge Representation and Reasoning*, WEB PUBLISHING OF SCIENTIFIC DATA AND SERVICES TRAINING COURSE, Fredericton, Canada, 2011.
- *Keynote talk: Leverage of Semantic Web Services for Practical Application – Creating Transferable Methodology with SADI Case Studies*, ATLANTIC WORKSHOP ON SEMANTICS AND SERVICES (AWOSS 10.2), Moncton, Canada, 2010.
- *Expressive Querying of Semantic Databases with Incremental Query Rewriting*, ATLANTIC WORKSHOP ON SEMANTICS AND SERVICES (AWOSS 10.2), Moncton, Canada, 2010.
- *Algorithms and Semantic Infrastructure for Mutation Impact Extraction and Grounding*, THE 9TH INTERNATIONAL CONFERENCE ON BIOINFORMATICS (INCOB 2010), Tokyo, Japan, 2010.
- *Efficient Semantic Querying of Relational Databases with Resolution*, THE SECOND CANADIAN SEMANTIC WEB WORKING SYMPOSIUM (CSWWS 2009), Kelowna, Canada, 2009.
- *Efficient Checking of Term Ordering Constraints*, SECOND INTERNATIONAL JOINT CONFERENCE ON AUTOMATED REASONING (IJCAR 2004), Cork, Ireland, 2004.
- *Invited talk: Towards efficient backward demodulation*, 3RD INTERNATIONAL WORKSHOP ON THE IMPLEMENTATION OF LOGICS (ASSOCIATED WITH LPAR), Tbilisi, Georgia, 2002.
- *Splitting without backtracking*, SEMANTIC FOUNDATIONS OF PROOF-SEARCH, SCHLOSS DAGSTUHL SEMINAR NO. 01141, Schloss Dagstuhl, Germany, 2001.
- *Path-indexing with database joins for efficient retrieval of instances and backward subsumption*, DEDUCTION, SCHLOSS DAGSTUHL SEMINAR NO. 01101, Schloss Dagstuhl, Germany, 2001.
- *Adaptive Saturation-Based Reasoning*, PERSPECTIVES OF SYSTEM INFORMATICS, 4TH INTERNATIONAL ANDREI ERSHOV MEMORIAL CONFERENCE (PSI 2001), Novosibirsk, Russia, 2001.
- *Splitting without Backtracking*, SEVENTEENTH INTERNATIONAL JOINT CONFERENCE ON ARTIFICIAL INTELLIGENCE (IJCAI 17), Seattle, US, 2001.

- *Making Your Prover Meet the Deadline*, EIGHTH WORKSHOP ON AUTOMATED REASONING (ARW 2001), York, UK, 2001.
- *Vampire 1.1 (System Description)*, FIRST INTERNATIONAL JOINT CONFERENCE ON AUTOMATED REASONING (IJCAR-1), Siena, Italy, 2001.
- *Partially Adaptive Code Trees*, EUROPEAN WORKSHOP ON LOGICS IN ARTIFICIAL INTELLIGENCE (JELIA 2000), Malaga, Spain, 2000.
- *System Description: Vampire 1.0*, SEVENTH WORKSHOP ON AUTOMATED REASONING (ARW 2000), London, UK, 2000.

As the CTO of IPSNP Computing Inc, I have also made numerous technical and business presentations to potential clients, partners and investors.

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- ▷ EPSRC grant “Efficient first-order theorem proving”, UK, 1999-2002.
- ▷ Overseas Research Student Award (ORS), UK, 1999.
- ▷ TFR grant “Technology for Implementing Proof-Search”, Sweden, 1998.