

# Curriculum Vitae

Roussanka Loukanova

April 14, 2024

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## Part I

# CV Résumé

**Name** Roussanka Loukanova  
**URL:** <http://www.math.bas.bg/logic/loukanovarp>  
<http://www.math.bas.bg/logic/loukanovarp/cv.pdf>  
<http://www.math.bas.bg/logic/loukanovarp/publications.pdf>  
**Languages** English (fluent), Bulgarian (native), Russian (fluent, dormant),  
Swedish (reading; simple writing; simple speech), French (idle)

## 1 Education and Degrees

**Bachelor program** in Mathematics: 1973 – 1976

Faculty of Mathematics and Mechanics (current Faculty of Mathematics and Informatics)  
Sofia University, Sofia, Bulgaria

**M.Sc. program and degree** in Mathematics: 1976 – 1978

M.Sc. degree in Mathematics: awarded July 1978

Specialization: Mathematical Logic

Department of Mathematical Logic and Applications, Faculty of Mathematics and Mechanics  
(current Faculty of Mathematics and Informatics), Sofia University, Sofia, Bulgaria

M.Sc. thesis subject: Generalized Recursion Theory

**M.Sc. program and degree** in Computer Science: 1998 – 1999

Department of Computer Science, Indiana University, Bloomington, IN, U.S.

**Ph.D. program and degree** in Mathematics: 1986 – 1992

Department of Discrete Mathematics, Faculty of Mechanics and Mathematics,

Moscow State University (MGU), Moscow, USSR — current Russia;

Saratov State University, Saratov, USSR — current Russia;

Department of Mathematics, University of Oslo, Norway, 1989 – 1990,

research work on my Ph.D. thesis, funded by

the Norwegian Research Council for Science and Humanities

Specialization code 01.01.09 — Mathematical Cybernetics

Subjects: Discrete Mathematics, Logic, Computability, Foundations of Computer Science,  
Formal Languages, Automata Theory, Computational Linguistics, Language Processing

Ph.D. dissertation: Situation Semantical Analysis of Natural Language

Adviser: Dr. of Sc., Academician, Professor Valery Borisovich Kudryavtsev

Faculty of Mechanics and Mathematics, Moscow State University (MGU), Moscow, Russia

Co-supervision: Professor Jens Erik Fenstad

Department of Mathematics, University of Oslo, Norway

Awarded degree: Ph.D. in Physical and Mathematical Sciences; date: 13 May 1992,

Higher Testimonial Committee at the Council of Ministers of USSR, Saratov State University,

Saratov; Ph.D. diploma: KD No 010991, Moscow, 3 July 1992; Russia

## 2 Academic Qualification

- Senior Assistant Professor in Mathematics  
Department of Mathematical Logic and Applications, Faculty of Mathematics and Informatics,  
Sofia University, Sofia, Bulgaria (June 29 1992)

- Universitetslektor — Senior Lecturer / Associate Professor in Computational Linguistics, Uppsala University, Uppsala, Sweden (February 1 2002)
- Associate Professor in Computer Science — an assessment by an international committee at Aalborg University, Denmark (13 April 2015)

### 3 Pedagogic Training

- Continuous work in the educational system of the Faculty of Mathematics and Informatics, Sofia University, Sofia, Bulgaria
- Extensive and continuous work in education at international universities
- A course *Teaching Computer Science* taken at the Department of Computer Science, Indiana University, Bloomington, IN, U.S.; September 1999 – December 2000
- *International Teacher Training Course*, Uppsala University, Uppsala, Sweden, 2006
- Publications on pedagogy

### 4 Employment

#### 4.1 Present

**19 August 2019 – :** Senior Assistant Professor in Mathematics  
Department of Algebra and Logic, Institute of Mathematics and Informatics (IMI),  
Bulgarian Academy of Sciences (BAS), Sofia, Bulgaria  
(<https://math.bas.bg/department-algebra-and-logic/?lang=en>)  
(qualification, June 29 1992, when awarded, by leaving abroad in June 1997, approximating Associate Professor in Mathematics)

#### 4.2 Former Positions

**October 23 1978 – December 15 1982:** Specialist (Mathematics)  
Computer Center of Ministry of Communications

**December 20 1982 – August 1 1984:** Specialist (Mathematics)  
Computer Center of Institute of Agricultural Sciences, Sofia, Bulgaria

**August 1 1984 – August 1 1986:** Mathematician  
Laboratory of Mathematical Linguistics  
Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria  
United Center of Mathematics and Mechanics, joined institution between:  
Institute of Mathematics and Informatics, Bulgarian Academy of Sciences  
and Faculty of Mathematics and Informatics, Sofia University Sofia, Bulgaria

**August 1 1986 – June 29 1992:** Assistant Professor  
Department of Mathematical Logic  
Faculty of Mathematics and Informatics, Sofia University  
Sofia, Bulgaria

**June 29 1992 – July 2 2001:** Senior Assistant Professor in Mathematics  
possibly approximating Associate Professor  
Department of Mathematical Logic and Applications  
Faculty of Mathematics and Informatics, Sofia University, Sofia, Bulgaria

**August 2000 – December 2001:** Visiting Assistant Professor

Department of Mathematics and Computer Science  
Illinois Wesleyan University, Bloomington, IL, U.S.

**February 1 2002 – May 31 2010:** Universitetslektor i Datorlingvistik / Senior University Lecturer / Associate Professor in Computational Linguistics, Uppsala University

(closed for lack of students in the program of Computational Linguistics)  
Department of Linguistics and Philology, Uppsala University, Uppsala, Sweden

**June 1 2010 – September 30 2014:** Independent Research, Uppsala, Sweden

**October 1 2014 – June 30 2016; July 1 2016 – June 30 2017:** Guest Lecturer and Forskare / Researcher, Department of Mathematics, Stockholm University, Stockholm, Sweden

**July 1 2017 – June 30 2018:** Forskare / Researcher

Department of Philosophy, Stockholm University, Stockholm, Sweden

### 4.3 Visiting Positions and Fellowships

**November 1989 – April 1990:** Visiting Researcher

Department of Mathematics, University of Oslo, Oslo, Norway  
Work Assignment: Research in Computational Semantics  
funded by a grant from the Norwegian Research Council for Science and Humanities in support of work on my Ph.D.

**February – March 1994:** Visiting Researcher

Center for Cognitive Science, Edinburgh, UK

**February – May 1995:** Visiting professorship

Department of Computer Science / Datalogisk Institut (DIKU), University of Copenhagen, Copenhagen, Denmark

**July 1997 – June 1998:** Visiting professorship

Department of Mathematics, Indiana University, Bloomington, IN, U.S.

**July 1998 – July 2000:** Visiting while on sabbatical

Department of Computer Science, Indiana University, Bloomington, IN, U.S.

**Spring Term 2000:** Visiting Assistant Professor

Institute of Linguistics, University of Minnesota, Minneapolis, MN, U.S.

**August 2000 – December 2001:** Visiting Assistant Professor

Department of Mathematics and Computer Science  
Illinois Wesleyan University, Bloomington, IL, U.S.

**May 2008:** Visiting fellow

Department of English Linguistics, University of Göttingen, Germany

**September – December 2008:** Visiting fellow

Tilburg Center for Logic and Philosophy of Science (TiLPS)  
Tilburg University, Tilburg, The Netherlands

**December 2015 – January 2016:** Guest Researcher

Department of Mathematics, Indiana University, Bloomington, IN, U.S.

**December 2017:** fellow of the Logic Group, Department of Mathematics, Stockholm University, Sweden, by CORCON grant, for research visiting at: Department of Mathematics and Statistics, University of Canterbury, Christchurch, New Zealand

**March 2018:** fellow of the Logic Group, Department of Mathematics, Stockholm University, Sweden, by a grant of the project: Computing with Infinite Data (CID) for research visiting at: School of Information Science, Japan Advanced Institute of Science and Technology (JAIST), Nomi, Japan

## Part II

# Scientific Expertise

## 5 Expertise

My expertise is on computational theories from the areas of Mathematical Logic, Theory of Computation, and their foundations of Computer Science and other computational sciences.

More specifically, my work has been in the following subjects:

- Type-Theoretic approaches to information theory and information processing
  - Dependent-Type Theory of Situated Information
  - Type-Theory of Algorithms
- Recursion Theory
- Computational Syntax — classic and new theories of formal and natural languages
- Automata Theory
- Mathematical and Computational Linguistics
- Computational Semantics of Formal and Natural Languages
- Computational Syntax-Semantics Interfaces in Formal and Natural Languages
- Partiality, underspecification, and dependency on situations, context, time, and agents, in information and languages
- Generalized Computational Grammar of Natural Language — covering lexicon and syntax-semantics interface
- Type-Theoretic Grammars
- Constraint-Based Lexicalized Grammar (CBLG) of Natural Language
- Computational Biology: DNA and Cell Computing based on formal languages and automata theory
- Bio-inspired Computational Theories of Information and Language — theory of computation, including classic and new theories of languages and automata
- Type-Theoretic Approach to Computational Neuroscience of Information and Language — based on theory of computation, including classic and new theories of languages and automata
- Computational models of information and languages based on their biological phenomena
- Artificial Intelligence

Primarily, my research has been on theoretical developments of syntax-semantics interfaces in natural and formal languages, from the perspective of their nature. My work targets technology advancements in computational sciences and applications.

The focus of my research is on computational models of *partiality, underspecification, and dependency on situations, context, time, and agents, in information and languages*.

I have been working along the following major lines:

- (1) New approach to the mathematical notion of algorithm: formalization of algorithms with recursion and iteration

- (2) New approach to Type-Theory of Situated Information: a computational approach to integration of declarative and procedural, dynamic computations, provided with memory for saving and updating partial, underspecified, situated, and agent dependent information
- (3) I have initiated work on integration of logic with quantitative mathematics, as theoretical foundation of Theory of Computation. The target of this integration advancement is applications to Data Science, Computational Linguistics, AI, Computational Neuroscience, advanced technology, etc.

By my work on new theoretical developments, I have been targeting fine-grained adequateness of computational processing of information and languages:

- in generalized and parametric varieties
- in various specific areas and domains, e.g., in forensics, medical sciences, healthcare, jurisdiction, law, etc.
- for computational models of memory, knowledge, reasoning, and communications, according to their biological phenomena

Such work benefits development of new approaches, methods, and techniques in Information Systems, Data Science, including Machine and Deep Learning.

Currently, my work is on theoretical developments of new methods and techniques, in Mathematical and Computational Linguistics, for advancements in language and information processing.

*General Scientific Interests:* My work is in conjunction with technology advancements. The areas that are directly and interdisciplinary interrelated are:

- Mathematical and Computational Linguistics
- Natural Language Processing (NLP)
- Text Processing
- Computational Biology, in particular, Neuroscience of Information and Language
- Artificial Intelligence (AI)
- Robotics
- Human-Computer Communications
- Methods of Computational Verification
- Automatic and Semi-Automatic Proofs in Mathematics
- Data Science
- other related advanced technologies and applications

## Part III

# Software

## 6 Experience with Software Packages

**Software and Programming:** Alongside background and expertise in theoretical foundations, I have experiences with software packages, automatic proof systems, model checkers, verification techniques for programming, large scale computational grammars of human language (e.g., Stanford HPSG / LKB / The CSLI LinGO Project, TRALE, Chalmers GF).

I have tried and used varieties of programming and specification languages.

By experiences with software packages, automatic proof systems, model checkers, verification techniques for programming, and especially with large-scale grammars of human language, I have encountered the many sides of software development, e.g., adequateness of software; efficiency; portability and compatibility with other systems; choice of programming languages; etc. By that, I see needs of integrated approaches. To address such problems, my research has been on development of new computational theories of language and information.

These experiences have been providing me with feedback for my work on theoretical developments.

- Theorem Provers, extensive experience, e.g., with:
  - the automated proof checking system MIZAR
  - the PVS Specification and Verification System (SRI Int.) — a specification language integrated with support tools and a theorem prover
  - Fitch — Natural Deduction proof assistant for First Order Logic; Logical Reasoning with Diagrams and Sentences (LRDS) (<https://www.gradgrinder.net>)
- Model Checkers, extensive experience, e.g.:
  - SMV System
  - Tarski’s World, for First Order Logic (<https://www.gradgrinder.net>)
- Large scale grammars of human languages, e.g.:
  - LKB, CSLI LinGO Project  
I have extensive experience with LKB.  
Stanford University, Center for the Study of Language and Information (CSLI) (<https://www-csli.stanford.edu/groups/lingo-project>) (<https://github.com/delph-in/docs/wiki/LkbTop>)  
Accessed: Feb 24 2024
  - TRALE, a grammar development system for Head-Driven Phrase Structure (HPSG) (<https://hpsg.hu-berlin.de/Software/>) Accessed: Feb 24 2024
  - Chalmers *GF*, Gramatical Framework (<https://www.grammaticalframework.org/>) as a part of my research and course projects on foundations of generalized CBLG and type-theoretic grammar of human languages
- Software and courseware packages, with which I have extensive experience:
  - *Language, Proof and Logic: Tarski’s World, Fitch, Boole*, (LPL) by Dave Barker-Plummer, Jon Barwise, and John Etchemendy (<https://www.gradgrinder.net>) at CSLI Publications, Stanford: (<https://web.stanford.edu/group/cslipublications/cslipublications/site/9781575866321.shtml>)
  - Logical Reasoning with Diagrams and Sentences (LRDS), by Dave Barker-Plummer, Jon Barwise, and John Etchemendy and the advanced natural deduction software Hyperproof (<https://www.gradgrinder.net/Products/lrds-index.html>)
  - Formal Grammars and Automata Software packages, e.g.:
    - \* *Turing’s World*. Dave Barker-Plummer, Jon Barwise, and John Etchemendy
    - \* *JFLAP: An Interactive Formal Languages and Automata Package* (<https://www2.cs.duke.edu/csed/jflap/>)
    - \* Finite State Technology of XEROX

## Part IV

# Pedagogic Profile — Short Description

The following is a brief overview of my teaching work. Details are given in my full Pedagogic Portfolio.



## 7 Experience in Teaching

My major expertise in teaching is in:

- *Mathematical Logic*
- *Discrete Mathematics*
- *Theory of Computability and Theory of Computation*
- *Theory of Formal Languages and Automata Theory*
- *Recursion Theory*
- *Mathematical Foundations of:*  
*Computational Linguistics, Natural Language Processing, Computer Science*
- *Applications of Logic to:*  
*Computational Linguistics, Natural Language Processing, Computer Science*
- *Natural Language Processing*
- *Mathematical Methods in Computational Linguistics*
- *Computational Syntax*
- *Computational Semantics*
- *Computational Syntax, Semantics, and Syntax-Semantics Interfaces*
- *Computational Syntax-Semantics Interfaces*
- *Natural Language Processing in Artificial Intelligence*
- *Mathematical Foundations of Cognitive Science*

### 7.1 Courses Taught and Developed

- *Theory of Computability*
- *Theory of Formal Languages and Automata Theory*
- *Applied Automata Theory*
- *Mathematical Foundations of Computer Science*
- *Mathematical Logic*
- *Logical Methods in Linguistics*
- *Formal and Computational Syntax and Semantics*
- *Discrete Mathematics*
- *Finite Mathematics*
- *Situation Theory and Situation Semantics*
- *Mathematics and Logic for Cognitive Science*
- *Computational Linguistics*
- *Topics in Syntax and Semantics*
- *Introduction to Computer Science*
- *Introduction to the WEB*
- *Calculus I, II*
- *Information Retrieval*
- *Algorithms and Data Structures*
- *Programming Languages*
- *Logic*
- *Mathematical Linguistics*
- *Natural Language Processing for Computer Science Students*
- *Formal Syntax*
- *Computational Grammar*
- *Computational Syntax and Parsing Algorithms*
- *Computational Semantics*
- *Logics for Linguistics*, a series of lectures and seminars (co-organiser and lecturer):  
<https://staff.math.su.se/rloukanova/logling>

## 8 Experience as a Supervisor

### 8.1 Supervision of Bachelor and Master's Theses

- Over years of teaching, I have supervised many course projects at basic, intermediate, and advanced levels (it's impossible for me to count them now).
- At the Faculty of Mathematics and Informatics, Sofia University, I taught upper level, specialized courses for theses. I supervised Master's (M.Sc.) theses in informatics and computational linguistics. E.g., a student completed his M.Sc. thesis on implementation of the situation semantics analysis developed in my Ph.D. dissertation.
- Supervisor of Bachelor of Science (BSc) thesis in Mathematics, Department of Mathematics, Stockholm University, Sweden

Title: *Montague's Intensional Logic for Computational Semantics of Human Language*. Student: Axel Ljungström, 2018:K16<sup>1</sup>

<https://www.math.su.se/publikationer/uupsatsarkiv/tidigare-examensarbeten-i-matematik/kandidatarbeten-matematik-2018-1.371073>

### 8.2 Supervision of Ph.D. Students

At Sofia University, where I was on a full-time faculty post, a Ph.D. student developed a Prolog system, as a part of the Ph.D. dissertation, on education in mathematics for children, which used situational structures, similar to the ones in my Ph.D. dissertation. I was an additional adviser for the development of the system.

In the Autumn 2014, I supervised PhD students of the Department of Mathematics, Stockholm University, on their project work on the Chalmers GF, Gramatical Framework.

### 8.3 Participation in Evaluation Committees of M.Sc. and Ph.D. Theses

- During my work at Sofia University, Bulgaria, I served many times as a reviewer of M.Sc. theses and Ph.D. dissertations of students specializing in mathematical logic, computational linguistics, and computer science.
- Twice as an opponent and member of examination committees of Ph.D. theses (betygsnämnd i Ph.D. disputation) at the Department of Information Technology, Uppsala University, Sweden
- an opponent and member of the examination committee of the Ph.D. theses, at School of Computer Science and Communication (CSC), at KTH Royal Institute of Technology in Stockholm;

(1) Marc Vinyals, PhD thesis: "Space in Proof Complexity" (9 June 2017)

(2) Susanna F. de Rezende, PhD thesis: "Lower Bounds and Trade-offs in Proof Complexity" (14 June 2019)

(<http://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A1318061&dswid=7905>)

## 9 Some Lecture Materials on Teaching

For publications on pedagogic and teaching materials, see List of Publications, Sects. 13.4, 13.5.

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<sup>1</sup>Copy-paste long URL addresses may add some empty space at the point of line breaks, which has to be removed in the URL address slot of a browser.

## Part V

# Grants, Projects

**Research funds:** Predominantly, since 2009, up to September 30, 2014, I maintained my research work as an Independent Researcher. From 1 October 01, 2014 to May 2018, my research was supported by the Department of Mathematics and by the Department of Philosophy, Stockholm University, Sweden.

**11 October 2021 – 10 October 2025** Project: COST Action  
*European Research Network on Formal Proofs (EuroProofNet)* CA20111  
<https://www.cost.eu/actions/CA20111/>  
<https://europroofnet.github.io>

The main proposer is Frédéric Blanqui. I'm a secondary proposer, together with colleagues from other countries. I'm happily proud that I am:

- elected as a member of the Management Committee (MC) of EuroProofNet
- elected as the vice-leader of WG6: Type theory, work group of EuroProofNet
- assigned in the following Working Groups (WGs) of EuroProofNet:
  - WG1: Tools for proof systems interoperability
  - WG2: Automated theorem provers
  - WG3: Program verification
  - WG6: Type theory

### In the Past:

- 1986 – 1991: Grant by an exchange program between Bulgarian Ministry of Education and Moscow State University (MGU), Moscow, USSR, for Ph.D. program in Mathematics: 1986 – 1991 at: Department of Discrete Mathematics, Faculty of Mechanics and Mathematics, Moscow State University (MGU), Moscow, USSR — current Russia
- Over the years at Sofia University, participation in research projects in the areas of logic, computability, and computational linguistics, by research contracts between the Bulgarian Ministry of Sciences and Higher Education, The Institute of Mathematics and Informatics of Bulgarian Academy of Sciences, and the Department of Mathematical Logic, Faculty of Mathematics and Informatics, Sofia University
- Research on Computational Semantics as part of my PhD research program, supported by a grant from the Norwegian Research Council for Science and Humanities, Oct 1989 – Apr 1990
- A Tempus grant for a project on Computational Semantics, 1994
- A travel grant from Vetenskapsrådet, Swedish Research Council, NT, Sweden, for participation in *Theoretical Aspects of Computing — ICTAC 2007*
- partial grant towards travel and accommodation expenses from:  
 University of Göttingen, Germany  
 Visiting research fellow at the Department of English Linguistics, May 2008  
 The result was a research paper on syntax-semantics interface in CBLG by using the language of acyclic recursion.
- partial grant towards travel and accommodation expenses from:  
 Tilburg Center for Logic and Philosophy of Science (TiLPS), Tilburg University  
 Visiting research fellow at TiLPS, Sep – Dec 2008  
 The result was a publication and participation in a conference — ForLing 2008 — and work on research project on Computational Semantics for natural and artificial languages. In parallel, I taught and conducted work on distance teaching on formal methods and theoretical foundations of computer science.

- Grant towards travel expenses for participation in AAIA'15: 6636 SEK 48 öre from: Department of Mathematics, Stockholm University, Stockholm, Sweden towards expenses for participation at:  
10th International Symposium Advances in Artificial Intelligence and Applications (AAIA'15) Lodz, Poland, 13-17 Sep 2015 (<https://fedcsis.org/2015/aaia.html>)
- Grant towards travel expenses for participation in AAIA'17: 8042 SEK 21 öre from: Department of Philosophy, Stockholm University, Stockholm, Sweden towards expenses for participation at:  
International Symposium Advances in Artificial Intelligence and Applications (AAIA'17), Prague, Czech Republic, 3 – 6 September, 2017 (<https://fedcsis.org/2017/aaia>)
- Grant towards travel expenses for participation in AAIA'18 / AIRIM'18  
3rd International Workshop on AI aspects of Reasoning, Information, and Memory (AIRIM'18) Poznań, Poland, 9 - 12 September, 2018 (<https://fedcsis.org/2018/airim>)  
granted:
  - (1) by FedCSIS: registration fee waiver, for chairing AIRIM'18 (550 euros)
  - (2) by the Adam Mickiewicz University:
    - accommodation
    - daily food coverage: 200 Polish Zloty (equivalent to approx 500 SEK)
    - local transport in Poznań
- Grants towards travel expenses for participation in the International Conference on Agents and Artificial Intelligence, ICAART (<https://icaart.scitevents.org>):
  - (1) 3 x 595 = 1785 euro  
from:  
INSTICC, The Institute for Systems and Technologies of Information, Control and Communication (<https://portal.insticc.org>)  
grants equivalent to waiving regular participation fees for ICAART 2015, ICAART 2018, ICAART 2019
  - (2) 6228 SEK 93 öre (approximately 623 euro)  
towards travel expenses for participation in ICAART 2015  
from: Department of Mathematics, Stockholm University, Stockholm, Sweden
  - (3) 6812 SEK 47 öre  
towards travel expenses for participation in ICAART 2018:  
from: Department of Philosophy, Stockholm University, Stockholm, Sweden
- 71 000 SEK  
from: Vetenskapsrådet (<https://www.vr.se>) konferensbidrag  
Diarienummer: 2017-00571 Project title: Workshop om logik och algoritmer i datorlingvistik 2017 (LACompLing17)  
Project leader: Roussanka Loukanova Date of the award: 2017-06-13
- Grants towards travel expenses for participation in:  
Symposium *Possible Worlds: Problems and Prospects* at the Ninth European Congress of Analytic Philosophy (ECAP9), 21-26 August 2017, Munich
  - (1) 600 euro (6091 SEK 63 öre)  
from: Ludwig-Maximilians-Universität (LMU) München
  - (2) 2635 SEK 1 öre (approximately 263 euro)  
from: Department of Philosophy, Stockholm University, Stockholm, Sweden
- 2000 euro  
fellow of the Logic Group, Department of Mathematics, Stockholm University, Sweden  
a grant on the project CORCON  
towards expenses for research visiting, December 2017, at:  
Department of Mathematics and Statistics, University of Canterbury, Christchurch, New Zealand

- 2000 euro fellow of the Logic Group, Department of Mathematics, Stockholm University, Sweden a grant on the project: Computing with Infinite Data (CID) towards expenses for research visiting, March 2018, at: School of Information Science, Japan Advanced Institute of Science and Technology (JAIST), Nomi, Japan (<https://www.jaist.ac.jp/is/labs/ishihara-lab/www/english/index.html>)

**INGRACOMLEN:** Project, 2016 – 2018

**Project Title:** Algoritmos de inferencia gramatical para medir la complejidad relativa de las lenguas naturales (Grammatical Inference Algorithms for measuring the relative complexity of natural languages) INGRACOMLEN

**Financial Entity:** Ministerio de Economía y Competitividad, Spain

**Duration:** From 01/01/2016 to 31/12/2018

**Participant Universities:** Universitat Rovira i Virgili, Jean Monnet University, Roskilde University, Stockholm University

**Number of Researchers:** 8

**Scientist in Charge:** M. Dolores Jiménez López

**URL:** <https://ingracomlen.wordpress.com>

**Funding:** 28400 euro, designated for project meetings and conferences

**Funding to me, for my participation:**

- paid flights, hotel, buses, taxi (between Uppsala and Arlanda Airport, Stockholm) towards expenses for a project meeting at: Universitat Rovira i Virgili, Tarragona, Spain, 26-29 November 2016
- paid flights, hotel, registration fees of two full papers towards expenses for participation and presentation at: 15th International Conference on Distributed Computing and Artificial Intelligence (<https://www.dcai-conference.net>)
- paid flights, hotel; reimbursed 90 euro 95 cents: for buses, taxi (between shuttle-bus stops and residence, accommodation), towards expenses for a project meeting at: Universitat Rovira i Virgili, Tarragona, Spain, 17-19 December 2018

## Education Grants

- 2003, Spring term: Grant by Tübingen Linguistics Department, Germany, for participation as a lecturer, together with six students from Computational Linguistics at Uppsala University, in a virtual course on Information Retrieval, developed by an educational project with EU funding, at München, Tilburg, and Tübingen, hosted by Tübingen, Germany. The grant included full travel expenses for the students and me, for participation in a course conference at Tübingen Linguistics Department, Germany.

## Part VI

# Scholarly Activities

## 10 Scientific Organizations, Committees

### 10.1 Organization Committees, Chair

- The founder and a chair of the series of the Symposium *Logic and Algorithms in Computational Linguistics* (LACompLing):
  - Tentative edition in 2024–2025
  - Symposium *Logic and Algorithms in Computational Linguistics* 2021 (LACompLing2021): part of a week on *Mathematical Linguistics* (MALIN) 2021, Montpellier, 13–17 December 2021, online streaming by Université de Montpellier (<https://staff.math.su.se/rloukanova/LACompLing2021-web/>)
  - Symposium *Logic and Algorithms in Computational Linguistics* 2018 (LACompLing2018), Stockholm, 28–31 August 2018, Departments of Mathematics and Philosophy, Stockholm University (<https://staff.math.su.se/rloukanova/LACompLing2018-web/>)
  - Workshop on *Logic and Algorithms in Computational Linguistics* 2017 (LACompLing17), Stockholm, August 26, 2017, Department of Mathematics, Stockholm University (<https://staff.math.su.se/rloukanova/LACompLing17.html>)
- A general co-chair of the federated conferences of *Mathematical Linguistics* (MALIN) 2021, Montpellier, 13–17 December 2021
- The founder, chair, and co-organizer, of a series of special sessions, for several years, at the International Conference on Distributed Computing and Artificial Intelligence, DCAI (<https://www.dcai-conference.net>), e.g.:  
Special Session on Computational Linguistics, Information, Reasoning, and AI (CLIRAI) / (CompLingInfoReasAI) (<https://www.dcai-conference.net/tracks/special-sessions/clirai>)  
at the International Conference on Distributed Computing and Artificial Intelligence, DCAI
  - CLIRAI'24 at DCAI'24 University of Salamanca, Spain, 26th–28th June, 2024
  - CLIRAI'23 at DCAI'23 Guimarães, Portugal, 12–14 July 2023
  - CompLingInfoReasAI'22 at DCAI'22, L'Aquila, Italy - Hybrid, within PAAMS'22, 13–15 July, 2022
  - CompLingInfoReasAI'21 at DCAI'21, Salamanca, Spain, within PAAMS'21, 6th–8th October, 2021. Chairing the presentation session of CompLingInfoReasAI'21 at DCAI'21
  - Logic, Information, Language, Memory, Reasoning 2017 (LogInfoLangMR17), at the 14th International Conference on Distributed Computing and Artificial Intelligence 2017 (DCAI'17), Polytechnic of Porto, Porto (Portugal), 21st–23rd June, 2017 (<https://www.dcai-conference.net/>)
- The founder, organiser, and chair of:  
Special Session on Natural Language Processing in Artificial Intelligence - NLPinAI, within the International Conference on Agents and Artificial Intelligence - ICAART  
NLPinAI is a continuation of the series PUaNLP 2015–2017 at ICAART.
  - Large Language Models & Natural Language Processing in Artificial Intelligence - LLMaNPInAI 2024 — part of the main conference ICAART 2024, Rome, Italy, 24–26 February 2024. Technical Program: (<https://www.insticc.org/node/technicalprogram/ICAART/2024>) (<https://icaart.scitevents.org/>) / (<https://icaart.scitevents.org/?y=2024>)

- Zoom co-chairing: ICAART24-3B: Oral Presentations: Large Language Models (LLMs)  
Sunday, February 25th 2024 09:00 - 10:30
- NLPinAI 2023 within ICAART 2023, 22–24 February 2023 — Lisbon, Portugal  
(<https://icaart.scitevents.org/NLPinAI.aspx?y=2023>)
- NLPinAI 2022, within ICAART 2022, 3–5 February 2022  
(<https://icaart.scitevents.org/NLPinAI.aspx?y=2022>)
- NLPinAI 2021, within ICAART 2021, 4–6 February 2021  
(<https://icaart.scitevents.org/NLPinAI.aspx?y=2021>)
- NLPinAI 2020, within ICAART 2020, 22–24 February 2020, Valletta, Malta  
(<https://icaart.scitevents.org/NLPinAI.aspx?y=2020>)
- NLPinAI 2019, within ICAART 2019, 19–21 January 2019, Prague, Czech Republic  
(<https://icaart.scitevents.org/NLPinAI.aspx?y=2019>)
- NLPinAI 2018 within ICAART 2018, 16–18 January, 2018 - Funchal, Madeira, Portugal  
(<https://icaart.scitevents.org/NLPinAI.aspx?y=2018>)
- The founder and a co-chair of: of Special Session on Partiality, Underspecification, and Natural Language Processing - PUA<sub>NLP</sub> at International Conference on Agents and Artificial Intelligence - ICAART
  - PUA<sub>NLP</sub> 2017 at ICAART 2017, Rome, Italy, 24–26 February, 2017  
(<https://icaart.scitevents.org/?y=2017>)
  - PUA<sub>NLP</sub> 2016 at ICAART 2016, Rome, Italy, 24–26 February, 2016  
(<https://icaart.scitevents.org/?y=2016>)
  - PUA<sub>NLP</sub> 2015 at ICAART 2015, Lisbon, Portugal, 10–12 January, 2015  
(<https://icaart.scitevents.org/?y=2015>)
- The founder and a co-chair of:  
Special Session on Natural Language and Argumentation 2020 (NLA'20) at the 17th International Conference on Distributed Computing and Artificial Intelligence — DCAI'20, ONLINE, 7th–9th October, 2020 (<https://www.dcai-conference.net>)
- The founding organizer and a co-chair of the International Workshop on AI aspects of Reasoning, Information, and Memory, (AIRIM) since 2016, AIRIM'16, AIRIM'17, AIRIM'18, continued by the International Workshop on AI aspects in Reasoning, Languages, and Computation (AIRLangComp) at the Federated Conference on Computer Science and Information Systems (<https://www.fedcsis.org>)
  - AIRLangComp'19, Leipzig, Germany, 1 - 4 September, 2019  
(<https://www.fedcsis.org/2019/airlangcomp>)
  - AIRIM'18, Poznań, Poland, 9 - 12 September, 2018  
(<https://www.fedcsis.org/2018/airim>)
  - AIRIM'17, Prague, Czech Republic, 4 - 7 September, 2017  
(<https://www.fedcsis.org/2017/airim>)
  - AIRIM'16, Gdansk, Poland, 11 - 14 September, 2016  
(<https://www.fedcsis.org/2016/airim>)
- A member of the local organization committees of
  - The third Nordic Logic Summer School 2017, Stockholm, 7–11 August, 2017
  - Logic Colloquium 2017, Stockholm, 14–20 August, 2017
  - Computer Science Logic, CSL'2017 — the annual conference of the European Association for Computer Science Logic (EACSL), Stockholm, August 20–24, 2017
- The organizer and a co-chair of the Special Session S2: Languages, Information, and Computational Intelligence — LangInfoCompInt 2015 at the IEEE Region 10 International Conference (IEEE TENCON 2015)



## 10.2 Reviewing and Member of Program Committees

### 10.2.1 Area Supervisory Committee

- Area Supervisory Committee | Track Program Committee | Program Committee for Federated conference on Computer Science and Information Systems — FedCSIS: International Symposium Advances in Artificial Intelligence and Applications (AAIA), FedCSIS - AAIA, 2017–2019 (<https://fedcsis.org/2017/aaia/committee>)

### 10.2.2 Program Committees

- The founder and chair of ongoing:  
Special Session on Natural Language Processing in Artificial Intelligence - NLPinAI, within the International Conference on Agents and Artificial Intelligence - ICAART  
NLPinAI is a continuation of the series PUaNLP 2015–2017 at ICAART.  
(<https://icaart.scitevents.org/NLPinAI.aspx?y=2023>)  
(<https://icaart.scitevents.org>)
- Distributed Computing and Artificial Intelligence, Special Sessions I, 20th International Conference. Special Session on Computational Linguistics, Information, Reasoning, and AI (CLIRAI) / (CompLingInfoReasAI)  
(<https://www.dcai-conference.net/tracks/special-sessions/clirai>)
- The founder and chair of:  
Special Session on Natural Language and Argumentation 2020 (NLA'20)  
(<https://www.dcai-conference.net/special-sessions/nla20>)  
at the 17th International Conference on Distributed Computing and Artificial Intelligence — DCAI'20, 7th-9th October, 2020
- IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT), since 2014
- International Conference on Brain Informatics (BI), since 2014
- International Symposium Advances in Artificial Intelligence and Applications AAIA, since 2015, at Federated conference on Computer Science and Information Systems — FedCSIS (<https://fedcsis.org>)
- International Conference on Brain Informatics (BI 2019) — Brain Science meets Artificial Intelligence December 13–15, 2019, Haikou, Hainan, China  
(<http://wi-consortium.org/conferences/bi2019/index.html>)
- Workshop on Linguistic Complexity and Natural Language Processing (LC&NLP). Workshop at the 27th International Conference on Computational Linguistics (COLING 2018). Santa Fe, New Mexico (U.S.), 25 August 2018. (<https://lcandnlp.wordpress.com>)
- Workshop *Situations, Information, and Semantic Content*, Munich Center for Mathematical Philosophy (MCMP), LMU, Ludwig-Maximilians-Universität München 16-18 December, 2016 (<http://www.situatedcontent2016.philosophie.uni-muenchen.de/index.html>)
- Special session on Partiality, Underspecification, and Natural Language Processing - PUaNLP 2015–2017 at ICAART
- The IEEE Region 10 International Conference (TENCON 2015)

## 11 Other International Engagements

See the Section in my CV about Visiting positions and fellowships. The following is a selection of participation at international events.



## 11.1 Some Conference and Seminar Participation, Talks, Presentations

- Roussanka Loukanova — *Relations between let-Terms of Lambda-Calculus and where-Terms of Type-Theory of Recursion*. At: European Research Network on Formal Proofs (EuroProofNet) CA20111. WG6 Type Theory: WG6 meeting in Leuven, Belgium, 4–5 April 2024.  
<https://europroofnet.github.io/wg6-leuven/>  
<https://europroofnet.github.io/wg6-leuven/programme/#loukanova>
- Roussanka Loukanova — *Semantics of Propositional Attitudes in Type-Theory of Algorithms*. at: Seminar of Algebra and Logic. Institute of Mathematics and Informatics (IMI), Bulgarian Academy of Sciences (BAS). Nov 24, 2023.  
[http://www.math.bas.bg/algebra/seminarAiL/2023/No18\\_2023\\_11\\_24\\_R\\_Loukanova/Abstract-Loukanova-propat-tta-2023-11-24.pdf](http://www.math.bas.bg/algebra/seminarAiL/2023/No18_2023_11_24_R_Loukanova/Abstract-Loukanova-propat-tta-2023-11-24.pdf)
- Roussanka Loukanova — *Semantics of Propositional Attitudes in Type-Theory of Algorithms*. the 20th International Workshop of Logic and Engineering of Natural Language Semantics 20 (LENLS20). Hosted by The Association for Logic, Language and Information (FoLLI). 18–20 November, 2023.  
<https://lenls.github.io/lenls20/#program>  
<https://lenls.github.io/lenls20/LENLS20OnlineProceedings.pdf>
- Roussanka Loukanova — *Rendering Natural Language of Mathematical Texts into Formal Language* (Invited Talk) [slides on the website]  
<https://europroofnet.github.io/cambridge-2023/#loukanova>
- Loukanova, Roussanka: *Logic Operators and Quantifiers in Type-Theory of Algorithms*. at: International Conference Logic and Engineering of Natural Language Semantics 19 (LENLS19). 19–20 November, 2022. Hosted by The Association for Logic, Language and Information (FoLLI). <https://lenls.github.io/lenls19/>
- Loukanova, Roussanka: *Logic Operators and Quantifiers in Type-Theory of Algorithms*. (on extended work) at: Seminar of Algebra and Logic. Institute of Mathematics and Informatics (IMI), Bulgarian Academy of Sciences (BAS). Nov 25, 2022.  
[http://www.math.bas.bg/algebra/seminarAiL/2022/No27\\_2022\\_11\\_25\\_R\\_Loukanova/Algebra\\_Logika\\_seminar\\_25-11-2022.pdf](http://www.math.bas.bg/algebra/seminarAiL/2022/No27_2022_11_25_R_Loukanova/Algebra_Logika_seminar_25-11-2022.pdf)
- *Algorithmic Dependent-Type Theory of Situated Information and Context Assessments*. 19th International Conference on Distributed Computing and Artificial Intelligence | L’Aquila (Italy), 13th–15th July, 2022. ([pdf](#))
- *Dependent-Type Theory of Situated Information with Context Assessments*. Seminar of Algebra and Logic, Department of Algebra and Logic, Institute of Mathematics and Informatics (IMI), Bulgarian Academy of Sciences (BAS), Bulgaria, Online, 24 June 2022  
([abstract](#)) ([slides at IMI, pdf](#)) / ([slides at SU, pdf](#))
- *Restricted Quantification in New Type-Theory of Algorithms*. Seminar of Algebra and Logic, Department of Algebra and Logic, Institute of Mathematics and Informatics (IMI), Bulgarian Academy of Sciences (BAS), Bulgaria, Online, 03 Dec 2021 ([abstract](#)) / ([slides at IMI, pdf](#)) ([slides at SU, pdf](#))  
(<http://www.math.bas.bg/algebra/seminarAiL/index2021.html>)  
(<http://www.math.bas.bg/algebra/seminarAiL/>)
- *Reduction Calculus of Type-Theory of Acyclic Algorithms, Parts I–II*. Seminar of Algebra and Logic, Department of Algebra and Logic, Institute of Mathematics and Informatics (IMI), Bulgarian Academy of Sciences (BAS), Bulgaria, Online [abstract, 29 Feb 2021](#) / [abstract, 5 Feb 2021](#) / ([slides at IMI, BAS](#)) ([slides at SU pdf](#))  
(<http://www.math.bas.bg/algebra/seminarAiL/index2021.html>)
- *Type-Theory of Parametric Algorithms*. 2020 Annual Report Session of the Department of Algebra and Logic, Institute of Mathematics and Informatics (IMI), Bulgarian Academy of Sciences (BAS), Bulgaria, Online, 18 Dec 2020 ([slides at SU, pdf](#))

- (slides at IMI, pdf) / (<http://www.math.bas.bg/algebra/seminarAiL/>)
- *Type-Theory of Acyclic Algorithms for Semantics of Natural Languages*. 56th Linguistics Colloquium, Nov 26–28 2020 (<https://sites.google.com/view/lingcoll>) (pdf)
  - *Algorithmic Dependent-Type Theory of Situated Information*. 56th Linguistics Colloquium, Nov 26–28, 2020 (<https://sites.google.com/view/lingcoll>) (pdf)
  - *Type-Theory of Parametric Algorithms with Restricted Computations*. 17th International Conference on Distributed Computing and Artificial Intelligence — DCAI'20. 7th-9th October, 2020 L'Aquila, Italy, Online (<https://www.dcai-conference.net/>) (pdf)
  - *Algorithmic Eta-Reduction in Type-Theory of Acyclic Recursion*. ICAART 2020, 22–24 February 2020, Valletta, Malta (<https://icaart.scitevents.org/Abstract.aspx?idEvent=vY/cqtoXOJM=>)
  - *Type-Theory of Acyclic Recursion and its Reduction Calculus*. Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Bulgaria ([http://www.math.bas.bg/algebra/seminarAiL/Algebra\\_Logika\\_seminar\\_30-08-2019.pdf](http://www.math.bas.bg/algebra/seminarAiL/Algebra_Logika_seminar_30-08-2019.pdf))
  - *Computational Syntax-Semantics Interface with Type-Theory of Acyclic Recursion for Underspecified Semantics*. Computing Semantics with Types, Frames and Related Structures. Workshop at IWCS 2019. May 24th, 2019, University of Gothenburg, Sweden (<https://sites.google.com/view/cstfrsworkshop/>)
  - *Relations between Specified and Underspecified Quantification by Moschovakis Theory of Acyclic Recursion*. Logic, Language, and Mind Seminar, CLLAM, Department of Philosophy, Stockholm University. 15 March 2019
  - *Type-Theory of Acyclic Algorithms with Generalised Immediate Terms*. 11th International Conference on Agents and Artificial Intelligence (ICAART 2019). Knowledge Representation and Reasoning. 19–21 January 2019, Prague, Czech Republic (<https://icaart.scitevents.org/Abstract.aspx?idEvent=+cR5/GjpHzw=>) (<https://icaart.scitevents.org/Home.aspx?y=2019>)
  - *Formalisation of Situated Dependent-Type Theory with Underspecified Assessments*. Decision Economics. Designs, Models, and Techniques for Boundedly Rational Decisions. DCAI 2018. 20–23 June 2018, Toledo, Spain
  - *Syntax-Semantics Interfaces of Modifiers*. Distributed Computing and Artificial Intelligence, 15th International Conference. DCAI 2018. Special Session on Complexity in Natural and Formal Languages (CNFL). 20–23 June 2018, Toledo, Spain
  - *Type-theory of acyclic recursion and its calculi*. Second Workshop on Mathematical Logic and its Applications, 5–9 March 2018, Kanazawa, Japan (<http://www.jaist.ac.jp/is/labs/ishihara-lab/mla2018/index.html>)
  - *Gamma-star Reduction in the Type-theory of Acyclic Recursion*. 10th International Conference on Agents and Artificial Intelligence, ICAART 2018, 16–18 January, 2018 - Funchal, Madeira, Portugal (<https://icaart.scitevents.org/?y=2018>)
  - *Moschovakis Acyclic Recursion and its Reduction Calculi*. Talk given at Mini-Symposium: CORCON 4 Dec17. Department of Mathematics and Statistics, University of Canterbury, Christchurch, New Zealand. 4 December 2017
  - *Semantic Argument Slots in the Type-Theory of Acyclic Recursion and Syntax-Semantics Interfaces in CBLG*. at: Logic and Engineering of Natural Language Semantics 14 (LENLS 14) a workshop of the JSAI International Symposia on AI (isAI2017)
  - Invited talk: *Algorithmic Concepts of Situated Information*. Symposium *Possible Worlds: Problems and Prospects* at the Ninth European Congress of Analytic Philosophy (ECAP9), 21-26 August 2017, Munich (<http://analyticphilosophy.eu/ecap9/>)
  - Invited talk: *Type Theory of Situated Information*, Workshop on Logic and Algorithms in Computational Linguistics 2017 (LACompLing17), Stockholm, August 26, 2017 (<https://staff.math.su.se/rloukanova/LACompLing17.html>)

- Contributed talk: *Type Theory of Restricted Algorithms and Neural Networks*. Logic Colloquium 2017, August 14-20 2017, Stockholm  
(<https://www.math-stockholm.se/en/konferenser-och-akti/logic-in-stockholm-2/logic-colloquium-201>)
- *Type Theory of Situated Algorithms (TTofSitAlg)*. New Worlds of Computation (NWC 2017) and Journées Calculabilités 12-14 Apr 2017, Orléans, France  
(<https://nwc2017-jcal.sciencesconf.org>)
- Invited speaker to the workshop *Situations, Information, and Semantic Content*, Munich Center for Mathematical Philosophy (MCMP), LMU, Ludwig-Maximilians-Universität München, 16-18 December, 2016  
(<http://www.situatedcontent2016.philosophie.uni-muenchen.de/index.html>)
- *Underspecified Quantification by the Theory of Acyclic Recursion*. International Conference on Practical Applications of Agents and Multi-Agent Systems, PAAMS 2016, Sevilla Spain, 1-3 June, 2016 (<http://paams.net/>)
- *A Formal Language of Type Theory of Situated Information*. 27th Nordic Congress of Mathematicians, Institut Mittag-Leffler, Stockholm, 16-20 March, 2016  
(<http://www.mittag-leffler.se/congress-2016>)
- *Reduction Calculi in Type Theory of Acyclic Recursion and Applications*. 27th Nordic Congress of Mathematicians, Institut Mittag-Leffler, Stockholm, 16-20 March, 2016  
(<http://www.mittag-leffler.se/congress-2016>)
- *A Formalization of Generalized Parameters in Situated Information*. Paper presentation at the Special Session on Partiality, Underspecification, and Natural Language Processing - PUaNL 2016, 8th ICAART 2016 (<https://icaart.scitevents.org/?y=2016>)
- *Acyclic Recursion with Polymorphic Types and Underspecification*. Paper presentation at the 8th International Conference on Agents and Artificial Intelligence — ICAART 2016  
(<https://icaart.scitevents.org/?y=2016>)
- *Gamma-Reduction in Type Theory of Acyclic Recursion*. Talk at the Stockholm Logic Seminar, Department of Mathematics, Stockholm University. 2016, February 17  
(<http://logic.math.su.se/seminar>)
- *Gamma-Reduction in Type Theory of Acyclic Recursion*. Talk at the Logic Seminar, Department of Mathematics, Indiana University, IU Bloomington (January 2016)
- *Specification of Underspecified Quantifiers via Question-Answering by the Theory of Acyclic Recursion*. Flexible Query Answering Systems (FQAS) 2015, October 26–28, 2015, Cracow, Poland (<http://fqas2015.ibspan.waw.pl>)
- *Representing Parametric Concepts with Situation Theory*. The 10th International Symposium Advances in Artificial Intelligence and Applications (AAIA'15), Lodz, Poland, 13–16 September, 2015 (<https://fedcsis.org/aaia>)
- Presentation *Underspecified Relations with a Formal Language of Situation Theory*. ICAART 2015, the 7th International Conference on Agents and Artificial Intelligence, Lisbon, Portugal, 10–12 January, 2015 (<https://icaart.scitevents.org>)
- *Algorithmic Granularity with Constraints*. 2013 International Conference on Brain and Health Informatics (BHI 2013), October 29–31, 2013, Maebashi Terrsa, Chiyodamachi, Maebashi-city, Gunma, Japan.  
([http://wi-consortium.org/conferences/amtbi13/bhi/index.php?category=accepted\\_ws](http://wi-consortium.org/conferences/amtbi13/bhi/index.php?category=accepted_ws))
- *Algorithmic Semantics for Processing Pronominal Verbal Phrases*. 10<sup>th</sup> International Conference on Flexible Query Answering Systems 2013 (FQAS 2013)  
(<http://idbis.ugr.es/fqas2013>)
- *Semantic Information with Type Theory of Acyclic Recursion*. Presentation at the 8th International Conference, AMT 2012, Macau, China, December 4–7, 2012.  
(<http://www.fst.umac.mo/wic2012/AMT>)

- *Algorithmic Semantics of Ambiguous Modifiers by the Type Theory of Acyclic Recursion*. Presentation at: 2011 IEEE/WIC/ACM International Conferences on Web Intelligence and Intelligent Agent Technology (WI-IAT 2012) Workshops. Natural Language Processing and Ontology Engineering (NLPOE 2012) 4–7 December 2012, Macau, China
- *A Predicative Operator and Underspecification by the Type Theory of Acyclic Recursion*. Presentation. Constraint Solving and Language Processing (CSLP) workshop. 13–14 September 2012, LIFO, the Computer Science laboratory of the University of Orléans, France (<https://www.univ-orleans.fr/lifo/evenements/CSLP2012/>)
- *Computational Syntax-Semantics Interface of Passive Forms with The Language of Acyclic Recursion*. Presentation at: TURING CENTENARY CONFERENCE: CiE 2012 - How the World Computes (<http://www.mathcomp.leeds.ac.uk/turing2012/WScie12>)
- *A New Perspective of Abstract Syntax with the Grammatical Framework GF*. Presentation at: Computability in Europe CiE 2011: Models of Computation in Context. Sofia, Bulgaria (<https://cie2011.fmi.uni-sofia.bg>)
- *Algorithmic Intensionality and Underspecification of Verb-Phrase Ellipsis*. An extended abstract presented at the 14th Congress of Logic, Methodology, and Philosophy of Science (CLMPS 2011) — Nancy, France, 19–26 July, 2011: Symposium: Hyperintension, intension, extension (<https://www.clmps2011.org>)
- *Computational intension, denotation, and propositional intention in the languages of acyclic recursion*. Presentation at: Logic Colloquium 2009, ASL (<https://lc2009.fmi.uni-sofia.bg/contributedslides/Loukanova.pdf>)
- *Formalisation of Intensionality as Algorithms*. (project outline) In: Eight International Conference on Computational Semantics. ACL Anthology. A Digital Archive of Research Papers in Computational Linguistics. (<https://aclanthology.org/W09-3731.pdf>)

## 11.2 Tutorials

- Tutorial *Higher-Order Situation Theory in Artificial Intelligence* at ICAART 2016, the 8th International Conference on Agents and Artificial Intelligence (<https://icaart.scitevents.org/Tutorials.aspx?y=2016>)

## Part VII

# Scientific Works

## 12 Work in Progress

- (1) *Some Higher-Order Logics for Type-Theoretic Semantics: TY2, TT2, and IL of Natural Language*. Draft, Preprint File at ResearchGate: [https://www.researchgate.net/publication/237405252\\_Some\\_Higher-Order\\_Logics\\_for\\_Type-Theoretic\\_Semantics\\_TY2\\_TT2\\_and\\_IL\\_of\\_Natural\\_Language](https://www.researchgate.net/publication/237405252_Some_Higher-Order_Logics_for_Type-Theoretic_Semantics_TY2_TT2_and_IL_of_Natural_Language)
- (2) *Type-Theory of Acyclic Algorithms for Syntax-Semantics Interfaces of Formal, Artificial, and Natural Languages*
- (3) *Algorithmic Dependent-Type Theory of Situated Information*
- (4) *Type Theory of Situated Information, its Dependent Types, and Syntax-Semantics Interfaces*
- (5) Loukanova, R.: *Semantics of Propositional Attitudes in Type-Theory of Algorithms*. Extended paper (in preparation). Accepted in: Logic and Engineering of Natural Language Semantics. LENLS 2023, Lecture Notes in Computer Science, LNCS, 2024. (FoLLI series.)

## 13 List of Publications

### 13.1 Publications in Journals or Book Chapters — Refereed

- (1) Loukanova, R.: Logic Operators and Quantifiers in Type-Theory of Algorithms. In: Bekki, D., Mineshima, K., McCreedy, E. (eds) Logic and Engineering of Natural Language Semantics. LENLS 2022, Lecture Notes in Computer Science, LNCS, Volume 14213, 2023. (FoLLI series) Springer, Cham. First Online: 24 October 2023.  
[https://doi.org/10.1007/978-3-031-43977-3\\_11](https://doi.org/10.1007/978-3-031-43977-3_11)  
Print ISBN 978-3-031-43976-6 Online ISBN 978-3-031-43977-3
- (2) Loukanova, R.: Restricted Computations and Parameters in Type-Theory of Acyclic Recursion. ADCAIJ: Advances in Distributed Computing and Artificial Intelligence Journal, 12(1) (2023), e29081. <https://doi.org/10.14201/adcaij.29081>  
<https://revistas.usal.es/cinco/index.php/2255-2863/article/view/29081/29667>  
(access to pdf)
- (3) Loukanova, R.: Eta-Reduction in Type-Theory of Acyclic Recursion. ADCAIJ: Advances in Distributed Computing and Artificial Intelligence Journal, 12(1) (2023), e29199.  
<https://doi.org/10.14201/adcaij.29199>  
<https://revistas.usal.es/cinco/index.php/2255-2863/article/view/29199/29663>  
(access to pdf)
- (4) Loukanova, R. *Currying Order and Restricted Algorithmic Beta-Conversion in Type Theory of Acyclic Recursion*. In: Pavel Materna and Bjørn Jespersen (eds). Logically Speaking. A Festschrift for Marie Duží. Tribute Series edited by Dov Gabbay. 2022. (Appeared in January 2023) Volume 49. pp. 285–310. College Publications. ISBN-10: 1848904193 ISBN-13: 978-1-84890-419-4 (<http://www.collegepublications.co.uk/tributes/?00049>)  
preprint at ResearchGate: DOI: 10.13140/RG.2.2.34553.75365  
(<https://doi.org/10.13140/RG.2.2.34553.75365>)
- (5) Loukanova, R.: *Type-Theory of Acyclic Algorithms for Models of Consecutive Binding of Functional Neuro-Receptors*. In: Grabowski A., Loukanova R., Schwarzweller C. (eds) AI Aspects in Reasoning, Languages, and Computation. Book series: Studies in Computational Intelligence (SCI). 2020. Volume 889. pp. 1–48. Springer International Publishing. Cham. DOI: 10.1007/978-3-030-41425-2\_1  
([https://doi.org/10.1007/978-3-030-41425-2\\_1](https://doi.org/10.1007/978-3-030-41425-2_1))
- (6) Loukanova, R.: *Gamma-Reduction in Type Theory of Acyclic Recursion*. Fundamenta Informaticae, Volume 170, no. 4, pp. 367–411, 2019. IOS Press. DOI: 10.3233/FI-2019-1867  
(<https://doi.org/10.3233/FI-2019-1867>)
- (7) R. Loukanova. *Gamma-Star Canonical Forms in the Type-Theory of Acyclic Algorithms*. In: van den Herik J., Rocha A. (eds) Agents and Artificial Intelligence. ICAART 2018. Lecture Notes in Computer Science, book series LNAI. Volume 11352. 2019. pp. 383–407. Springer International Publishing, Cham. DOI: 10.1007/978-3-030-05453-3\_18  
([https://doi.org/10.1007/978-3-030-05453-3\\_18](https://doi.org/10.1007/978-3-030-05453-3_18))
- (8) Loukanova, R.: *Partiality, Underspecification, Parameters and Natural Language*. In: H. Christiansen, M. D. Jiménez-López, R. Loukanova, L. S. Moss (Eds). Partiality and Underspecification in Information, Languages, and Knowledge. 2017. pp. 109–150. Cambridge Scholars Publishing. ISBN (13) 978-1-4438-7947-7; (10) 1-4438-7947-9  
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### 13.3 Books

- (69) Baynov, D., S. Kostadinov, R. Pavlov, R. Loukanova. *A book on tasks in Discrete Mathematics*. Plovdiv. 1990. (in Bulgarian)
- (70) Chimev, K., R. Pavlov, R. Loukanova. *A book on tasks in Discrete Mathematics*. HPI – Blagoevgrad. 1989. (in Bulgarian)

### 13.4 Publications on Pedagogy

- (1) Loukanova, R.: *Teaching with the Computerised Package Language, Proof, and Logic (LPL)* In: Boute, R and J.N. Oliveira (Eds.). *Formal Methods in the Teaching Lab*. Formal Methods 2006 Symposium McMaster University, Ontario, Canada. Workshop preprints. pp. 101–110.  
([https://www.academia.edu/24505627/Formal\\_Methods\\_in\\_the\\_Teaching\\_Lab\\_Examples\\_Cases\\_Assignments\\_and\\_Projects\\_Enhancing\\_Formal\\_Methods\\_Education](https://www.academia.edu/24505627/Formal_Methods_in_the_Teaching_Lab_Examples_Cases_Assignments_and_Projects_Enhancing_Formal_Methods_Education))
- (2) Loukanova, R.: *Teaching Formal Methods for Computational Linguistics at Uppsala University*. In: P. Boca, J.P. Bowen, D.A. Duce (Eds.). *Teaching Formal Methods: Practice and Experience*. 15 December 2006. Oxford Brookes University and BCS-FACS. Proceedings, pp. 57–62. DOI: 10.14236/ewic/TFM2006.11 (<https://doi.org/10.14236/ewic/TFM2006.11>)

### 13.5 Selected Teaching Materials

- (1) *First Order Logic: Syntax, Semantics, and Logic. Atomic Sentences, Boolean Connectives, Quantifiers*  
Abstract: Introduction to First Order Logic (FOL): lectures developed by me and taught partly on-line, using the LPL courseware: Language, Proof and Logic: Tarski's World, Fitch, Boole, (LPL) by Dave Barker-Plummer, Jon Barwise, and John Etchemendy CSLI Publications, Stanford (<https://www.gradgrinder.net>)  
File (1ec3-10-FOL-LPL-4up.pdf) at ResearchGate: DOI: 10.13140/RG.2.2.30778.88005 (<https://doi.org/10.13140/RG.2.2.30778.88005>)
- (2) *Computational Semantics. From Leibniz, Ongoing Passion fof Life, Math and Computers*  
Abstract: Initial Lecture Notes on Computational Semantics, in First Order Languages and Logic, and Foundations of Syntax-Semantics Interface

File (`init-CompSem1.pdf`) at ResearchGate: DOI: 10.13140/RG.2.2.24906.85444  
<https://doi.org/10.13140/RG.2.2.24906.85444>

- (3) *Lecture Notes: Foundation of Computer Science, II*  
 Lecture Notes for courses covering topics on Introduction to Formal Languages, Grammars, and Automata Theory.  
 File (`FoundCompSci2-07a.pdf`) at ResearchGate:  
 DOI: 10.13140/RG.2.2.19549.28648 (<https://doi.org/10.13140/RG.2.2.19549.28648>)
- (4) Lecture Notes for Advanced Computational Semantics: Logic Foundations of Montague Grammars Muskens' Relational Montague Grammar. Part I-II: The Logics TY2, TT2, and IL. Lectures on Advanced Computational Semantics  
 File (`ty2tt2-4up.pdf`) at ResearchGate: DOI: 10.13140/RG.2.2.26678.37449  
<https://doi.org/10.13140/RG.2.2.26678.37449>
- (5) Lecture Notes for Advanced Computational Semantics: a Revision of Montague Grammar: Muskens' Relational Montague Grammar. Part III: PTQ Revised. Lectures on Advanced Computational Semantics  
 File (`rev-ptq-4up.pdf`) at ResearchGate: DOI: 10.13140/RG.2.2.21645.20961  
<https://doi.org/10.13140/RG.2.2.21645.20961>
- (6) *Logics for Linguistics*, a series of lectures and seminars (co-organiser and lecturer), see Part 2  
<https://staff.math.su.se/rloukanova/logling>

## 13.6 Editor

- (1) Loukanova, R., Lumsdaine, P.L., Muskens, R. (Editors). *Logic and Algorithms in Computational Linguistics 2021 (LACompLing2021)*. Part of the book series: Studies in Computational Intelligence (SCI, volume 1081). DOI <https://doi.org/10.1007/978-3-031-21780-7> Publisher: Springer Cham. eBook ISBN 978-3-031-21780-7 Published: 11 March 2023. Hardcover ISBN 978-3-031-21779-1 Published: 12 March 2023. Series ISSN 1860-949X / Series E-ISSN 1860-9503
- (2) Mehmood, R., Alves, V., Praça, I., Wikarek, J., Parra, J., Loukanova, R., de Miguel, I., Pinto, T., Nunes, R., Ricca, M. (Editors). *Distributed Computing and Artificial Intelligence, Special Sessions I, 20th International Conference*. Part of the book series: Lecture Notes in Networks and Systems (LNNS). (DCAI 2023) Volume 741. 2023. Publisher: Springer Cham. Softcover ISBN 978-3-031-38317-5 eBook ISBN 978-3-031-38318-2 Published: 26 July 2023  
 DOI <https://doi.org/10.1007/978-3-031-38318-2>
- (3) Machado, J.M., Chamoso, P., Hernández G., Bocewicz G., Loukanova, R., Jove, E., del Rey, A. M., Ricca, M. (Editors). *Distributed Computing and Artificial Intelligence, Special Sessions, 19th International Conference*. Part of the book series: Lecture Notes in Networks and Systems (LNNS) DCAI 2022. Volume 585. 2023. DOI <https://doi.org/10.1007/978-3-031-23210-7> Publisher: Springer Cham.
- (4) González, S.R., Machado, J.M., González-Briones, A., Wikarek, J., Loukanova, R., Katranas, G., Casado-Vara, R. (Editors): *Distributed Computing and Artificial Intelligence. Volume 2: Special Sessions 18th International Conference*. Part of the book series: Lecture Notes in Networks and Systems. Volume 332. 2022. Springer International Publishing. eBook ISBN 978-3-030-86887-1. DOI <https://doi.org/10.1007/978-3-030-86887-1>
- (5) Ljungström, A., Loukanova, R., Lumsdaine, P.L., Muskens, R. (Editors): *Proceedings of the Symposium Logic and Algorithms in Computational Linguistics 2021 (LACompLing2021)*. Publisher: Stockholm University, 2021, DiVA Portal for Digital Publications. 2021. Identifiers: URN: urn:nbn:se:su:diva-200167 OAI: oai:DiVA.org:su-200167 DiVA, id: diva2:1623904



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- (6) Loukanova, R. (Editor): *Natural Language Processing in Artificial Intelligence — NLP in AI 2021*. Book series Studies in Computational Intelligence book series (SCI), Volume 999. Publisher: Springer, Cham. Hardcover ISBN 978-3-030-90137-0. Softcover ISBN 978-3-030-90140-0. eBook ISBN 978-3-030-90138-7.  
DOI <https://doi.org/10.1007/978-3-030-90138-7>
- (7) Loukanova, R. (Editor): *Natural Language Processing in Artificial Intelligence — NLP in AI 2020*. Book series Studies in Computational Intelligence book series (SCI), Volume 939. Publisher: Springer, Cham. Hardcover ISBN 978-3-030-63786-6. Softcover ISBN 978-3-030-63789-7. eBook ISBN 978-3-030-63787-3.  
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- (12) Angelov, K., Liefke, K., Loukanova, R., Moortgat, M., Tojo, S. (Editors): *Proceedings of the Symposium on Logic and Algorithms in Computational Linguistics 2018 (LACompLing2018)*. Publisher: Stockholm: Stockholm University, 2018. Identifiers:  
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- (14) Christiansen H., Jiménez-López, M.D., Loukanova, R., Moss, L.S. (Editors): *Partiality and Underspecification in Information, Languages, and Knowledge*. 2017. Cambridge Scholars Publishing. ISBN (13) 978-1-4438-7947-7; (10) 1-4438-7947-9  
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