

Rustam Galimullin

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RESEARCH INTERESTS Multi-Agent Systems • Knowledge Reasoning and Representation • Formal Methods for Blockchain

ACADEMIC POSITIONS **Postdoctoral Researcher**, April 2020 – Present
Department of Information Science and Media Studies, University of Bergen, Norway

Postdoctoral Researcher, September 2019 – April 2020
Laboratoire Spécification et Vérification, CNRS, ENS Paris-Saclay, France

EDUCATION **University of Nottingham**, Nottingham, UK

Ph.D., Computer Science, 2015 – 2019

- Thesis Title: *Coalition Announcements*
- Advisor: Dr. Natasha Alechina
- Summary: I considered various approaches to axiomatisations of logics with coalition announcement operators, and their expressivity relative to other logics of quantified public announcements

Tomsk State University, Tomsk, Russia

M.S., Software Testing and Verification (with distinction), 2011 – 2013

- Thesis Title: *Verification of UML Diagrams with Timed Finite-State Machines* (in Russian)
- Advisor: Dr. Nina Evtushenko
- Summary: I studied an automata-theoretic approach to formal verification of UML specifications

B.S., Radiophysics, 2007 – 2011

PAPERS

1. Ågotnes, T. and Galimullin, R. (2023) *Quantifying Over Information Change with Common Knowledge*, *Autonomous Agents and Multi-Agent Systems* **37**(19), p. 40.
2. Galimullin, R. and Velazquez-Quesada, F. R. (2023) *(Arbitrary) Partial Communication*, in: *Proceedings of the 22nd AAMAS* (accepted).
3. Galimullin, R. and Ågotnes, T. (2023) *Action Models for Coalition Logic*, in: C. Areces and D. Costa, editors, *Proceedings of the 4th DaLi*, LNCS **13780**, pp. 73–89.

4. van Ditmarsch, H., French, T., and Galimullin, R. (2022) *Satisfiability of Quantified Boolean Announcements*, <https://arxiv.org/pdf/2206.00903.pdf> (submitted to a journal).
5. Alechina, N., van Ditmarsch, H., French, T., and Galimullin, R. (2022) *The Expressivity of Quantified Group Announcements*, Journal of Logic and Computation.
6. Galimullin, R. and Ågotnes, T. (2022) *Coalition Logic for Specification and Verification of Smart Contract Upgrades*, in: R. Aydoğ̃an, N. Criado, J. Lang, V. Sánchez-Anguix and M. Serramia, editors, *Proceedings of the 24th PRIMA*, LNCS **13753**, pp. 563–572.
7. Galimullin, R. , Pedersen, M.Y., and Slavkovik, M. (2022) *Logic of Visibility in Social Networks*, in: A. Ciabattoni, E. Pimentel, and R. J. G. B. de Queiroz, editors, *Proceedings of the 28th WoLLIC*, LNCS **13468**, pp. 190–206.
8. Ågotnes, T., Alechina, N., and Galimullin, R. (2022) *Logics with Group Announcements and Distributed Knowledge: Completeness and Expressive Power*, Journal of Logic, Language and Information **31**(2), pp. 141–166.
9. Galimullin, R. and Ågotnes, T. (2021) *Dynamic Coalition Logic: Granting and Revoking Dictatorial Powers*, in: S. Ghosh and T. Icard, editors, *Proceedings of the 8th LORI*, LNCS **13039**, pp. 88–101.
10. van Ditmarsch, H., French, T., and Galimullin, R. (2021) *No Finite Model Property for Logics of Quantified Announcements*, in: J.Y. Halpern and A. Perea, editors, *Proceedings of the 18th TARK*, EPTCS **335**, pp. 129–138.
11. Galimullin, R. (2021) *Coalition and Relativised Group Announcement Logic*, Journal of Logic, Language and Information **30**(3), pp. 451–489.
12. Galimullin, R. and Ågotnes, T. (2021) *Quantified Announcements and Common Knowledge*, in: U. Endriss, A. Nowé, F. Dignum, and A. Lomuscio, editors, *Proceedings of the 20th AAMAS*, pp. 528–536.
13. Alechina, N., van Ditmarsch, H., Galimullin, R., and Wang, T. (2021) *Verification and Strategy Synthesis for Coalition Announcement Logic*, Journal of Logic, Language and Information **30**(4), pp. 671–700.
14. Galimullin, R., Ågotnes, T., and Alechina, N. (2019). *Group Announcement Logic with Distributed Knowledge*, in: P. Blackburn and E. Lorini, editors, *Proceedings of the 7th LORI*, LNCS **11813**, pp. 98–111.
15. Perrotin, E., Galimullin, R., Canu, Q., and Alechina, N. (2019). *Public Group Announcements and Trust in Doxastic Logic*, in: P. Blackburn and E. Lorini, editors, *Proceedings of the 7th LORI*, LNCS **11813**, pp. 199–213.
16. French, T., Galimullin, R., van Ditmarsch, H., and Alechina, N. (2019). *Groups versus coalitions: on the relative expressivity of GAL and CAL*, in:

N. Agmon, M.E. Taylor, E. Elkind, and M. Veloso, editors, *Proceedings of the 18th AAMAS*, pp. 953–961.

17. Galimullin, R., Alechina, N., and van Ditmarsch, H. (2018). *Model checking for coalition announcements logic*, in: F. Trollmann and A.-Y. Turhan, editors, *Proceedings of the 41st KI*, LNCS **11117**, pp. 11–23.
18. Galimullin, R. and Alechina, N. (2017). *Coalition and group announcement logic*, in: J. Lang, editor, *Proceedings of the 16th TARK*, EPTCS **251**, pp. 207–220.
19. Galimullin, R. (2013). Experimental Comparison of the Quality of TFSM-Based Test Suites for the UML diagrams. In *Proceedings of the 7th SYRCoSE*, pages 68–73.
20. Shabaldina, N. and Galimullin, R. (2012). On Deriving Test Suites for Nondeterministic Finite State Machines with Time-outs. *Programming and Computer Software*, volume 38, pages 127–133.
21. Galimullin, R. and Shabaldina, N. (2011). Separating Non-Deterministic Finite State Machines with Time-outs. In *Proceedings of the 5th SYRCoSE*, pages 100–104.

PRESENTATIONS

- Seminar at the Department of Computer Science, University of Liverpool, UK, February 2023
- International Conference on Principles and Practice of Multi-Agent Systems (PRIMA), Technical University of Valencia, Valencia, Spain, November 2022
- Dynamic Logic: New Trends and Applications (DaLí Workshop), Online, July 2022
- Logic and Deliberation workshop, Erasmus University Rotterdam, Rotterdam, the Netherlands, October 2021
- International Conference on Logic, Rationality, and Interaction (LORI), Xi’an Jiaotong University, Xi’an, China, Online, October 2021
- Theoretical Aspects of Rationality and Knowledge (TARK), Tsinghua University, Beijing, China, Online, June 2021
- International Workshop on Logical Aspects in Multi-Agent Systems and Strategic Reasoning (LAMAS & SR), London, UK, Online, May 2021
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS), London, UK, Online, May 2021
- Logic and Interactive Rationality (LIRa), ILLC, University of Amsterdam, The Netherlands, Online, April 2021
- Groupe de Travail, LMF, CNRS, Université Paris -Saclay, France, Online, March 2021
- Workshop CELLO, LORIA, Nancy, France, February 2020
- LSV Seminar, ENS Paris-Saclay, Paris, France, November 2019
- International Conference on Logic, Rationality, and Interaction (LORI), Southwest University, Chongqing, China, October 2019
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS), Concordia University, Montreal, Canada, May 2019

- The 41st German Conference on Artificial Intelligence (KI), TU Berlin, Germany, September 2018
- Theoretical Aspects of Rationality and Knowledge (TARK), University of Liverpool, UK, July 2017
- Workshop on Logical Aspects of Multi-Agent Systems (LAMAS), Stockholm University, Sweden, August 2017
- North-American Summer School on Logic, Language, and Information (NASSLLI), Rutgers University, US, July 2016
- Occasional Presentations on ‘FP (Functional Programming) Lunch’, University of Nottingham, UK
- Modern Analytic Philosophy, Tomsk, Russia, 2014
- 7th Spring/Summer Young Researchers’ Colloquium on Software Engineering, Kazan, Russia, 2013
- 5th Spring/Summer Young Researchers’ Colloquium on Software Engineering, Yekaterinburg, Russia, 2011

AWARDS AND GRANTS

- Meltzer Travel Grant 2023 (for research visit to University of Western Australia)
- Meltzer Travel Grant 2022 (for research visit to Liverpool University)
- Meltzer Travel Grant 2021 (for research visit to Utrecht University)
- SIGAI Travel Grant (for attending AAMAS 2019)
- Springer KI 2018 Best Student Paper Award
- Vice-Chancellor’s Scholarship for Research Excellence 2015 (covering tuition fees at Nottingham University)
- Microsoft SYRCoSE 2011 Best Paper Award

SUPERVISION EXPERIENCE

Master’s Thesis at University of Bergen, ongoing

I am currently supervising master’s thesis of Eirin Maria Larsson Aga on model checking logics for reasoning about smart contracts on a blockchain.

Bachelor’s Thesis at University of Nottingham, Spring 2019

Co-supervised Tuo Wang’s bachelor’s thesis with Natasha Alechina and Brian Logan. In particular, I was responsible for the supervision of a program implementation of a model checker. Later, the implementation was incorporated in a journal paper [13].

Internship at University of Nottingham, February – June 2019

Supervised the summer internship of Elise Perrotin (IRIT, Toulouse, France) and Quentin Canu (ENS Paris-Saclay, France). Under my supervision, Elise and Quentin studied modal logic and dynamic epistemic logic, and later we worked on some novel extensions thereof. The supervision resulted in a conference publication [15].

TEACHING EXPERIENCE

Lecturer at the European Summer School in Logic, Language, and Information

Quantification in Dynamic Epistemic Logic Summer of 2023

- Together with Dr. Louwe Kuijer from the University of Liverpool we will teach the course at this year’s ESSLLI. Web-page of the school:

<https://2023.esslli.eu>

- Topics to be covered: introduction to epistemic logic and dynamic epistemic logic, quantifying over public announcements and arrow updates, expressivity, complexity, main open problems in the field.

Lecturer at University of Bergen

Blockchain Technology and Formal Methods Autumn term of 2022

- This is a new master's course that I have developed, taught, and marked.
- Topics covered: state-of-the-art blockchain technology, formal methods for blockchain, including approaches that use game theory, cryptography, logic, etc.; smart contracts and programming in Solidity.

Knowledge Reasoning and Representation Autumn term of 2021

- Responsibilities: devising the course plan, preparing and delivering lectures both off- and on-line, preparing and marking obligatory assignments, managing teaching assistants, preparing and marking the final exam, helping students throughout the course.
- Topics covered: propositional and predicate logics, resolution techniques, knowledge engineering, programming in Prolog, epistemic logic, answer-set programming, planning, etc.

Teaching Assistant at University of Bergen

Metodar i kunstig intelligens (AI Methods) Autumn term of 2020

- Module Convenor: Dr. Bjørnar Tessem
- Python implementations of standard AI algorithms: search, optimisation, machine learning, etc.

Teaching Assistant at University of Nottingham

Knowledge Reasoning and Representation Autumn term of 2018

- Module Convenor: Dr. Natasha Alechina
- Basics of first-order logic, resolution, description logic, etc.

Algorithms Correctness and Efficiency 2017 – 2019

- Module Convenors: Dr. Andrew Parkes and Dr. Brian Logan
- Hoare triples, string and graph algorithms, loop invariants, recurrence relations, etc.

Mathematics for Computer Scientists Autumn terms of 2016 and 2017

- Module Convenor: Dr. Thomas Gärtner
- Basics of logic, set theory, probability theory, relations, and graph theory

Research Methods Spring terms of 2017 and 2018

- Module Convenors: Dr. Natasha Alechina and Dr. Julie Greensmith
- Tutorials on how to conduct a literature review, use references, write project proposals, etc.

Teaching Assistant at Tomsk State University

Philosophy of Mathematics

Spring term of 2014

- Module Convenor: Dr. Valeriy Surovtsev
- Seminars on logicism, formalism, intuitionism, structuralism and other topics.

PROFESSIONAL SERVICE

Organisation of IRL

December 2022

I organised the 2nd Interdisciplinary Research in Logic (IRL) workshop that took place in Bergen at the beginning of December. The idea behind the workshop was to create an event, where logicians from Bergen, working in the fields of informatics, mathematics, philosophy, and linguistics, can meet, present their work to their peers, and strike up new collaborations. Web-page of the event: <https://irl.w.uib.no>

Organisation of SLSS and NLS

June 2022

I was one of the local co-organisers of Scandinavian Logic Symposium (SLSS) and Nordic Logic Summer School (NLS) that took place at University of Bergen. My responsibilities included: taking care of room bookings, catering, accommodation, and correspondence with participants. Web-page of the event: <https://scandinavianlogic2020.w.uib.no>

PhD Hiring Committee

April – July 2021

Served as a member of PhD Hiring Committee at Department of Information Science and Media Studies, University of Bergen. My responsibilities included: short-listing applicants to a PhD position for an interview, conducting interviews with top four applicants, interviewing referees of the applicants, preparing the final ranking of the candidates and a hiring report.

REVIEWING ACTIVITIES

Senior PC Member

- European Conference on Artificial Intelligence (ECAI) 2023

PC Member

- Association for the Advancement of Artificial Intelligence Conference (AAAI) 2023
- International Joint Conference on Artificial Intelligence (IJCAI) 2023, 2022, 2021, 2020
- International Conference on Logic, Rationality and Interaction (LORI) 2023
- International Conference on Principles and Practice of Multi-Agent Systems (PRIMA) 2022, 2020, 2019
- International Conference on Logic and Argumentation (CLAR) 2023, 2021
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS) 2021, 2020

- European Conference on Artificial Intelligence (ECAI) 2020
- Workshop on Automated Synthesis 2021 (affiliated with ESSLLI)

Journals

- Artificial Intelligence 2022, 2019
- Studia Logica 2022
- ACM Transactions on Computational Logic 2020
- Journal of Applied Non-Classical Logics 2019

Conferences

- Proceedings of ESSLLI Student Sessions 2019–2020
- Benelux Conference on Artificial Intelligence and Belgian Dutch Conference on Machine Learning (BNAIC/BENELEARN) 2021
- Advances in Modal Logic (AiML) 2020
- Association for the Advancement of Artificial Intelligence Conference (AAAI) 2019
- International Conference on Logic, Rationality and Interaction (LORI) 2019, 2017

OTHER ACADEMIC EXPERIENCE

Attended summer schools

- European Summer School on Logic, Language, and Information (ESSLLI), Online, July – August 2021
- European Agent Systems Summer School (EASSS), Online, July 2021
- EASSS, Gdansk, Poland, August 2017
- ESSLLI, IRIT, Toulouse, France, July 2017
- North-American Summer School on Logic, Language, and Information (NASSLLI), Rutgers University, US, July 2016
- Midlands Graduate School in the Foundations of Computing Science, University of Birmingham, UK, April 2016

5-month internship at Faculty of Philosophy, Groningen University, the Netherlands, September 2014 - February 2015

- Learned *Deontic Logic* under supervision of Dr. Allard Tamminga
- Studied *Dynamic Epistemic Logic* under supervision of Dr. Barteld Kooi

Translated Kurt Gödel's paper *The Present Situation in the Foundations of Mathematics* (1933). Presented in *Jaakko Hintikka On Gödel*. Trans./Ed. Valeriy Surovtsev and Vitaliy Tselishev. Moscow: Kanon+ Publishing, 2014. One of the first translations of Gödel's works into Russian.

REFERENCES

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