

Alexander Rubtsov

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Born: February 24, 1990—Aktyubinsk, Kazah USSR
Nationality: Russian

Current positions

Research Fellow, Laboratory of Theoretical Computer Science
Higher School of Economics - National Research University
Senior Engineer, Coleman Services (provision of services for Huawei)
Associate Professor, Moscow Institute of Physics and Technology

Areas of specialization

Formal Languages, Automata Theory, Computational Complexity
Algorithms, Combinatorial Optimization
Web Development, System Administration

Appointments held

- 01.08.2020-
-now
Coleman Services (provision of services for Huawei). Research and Development in the field of cloud computing. Investigation and invention of online scheduling algorithms, solving problems in the area of algorithms and combinatorial optimization.
- 01.09.2014-
now
Higher School of Economics - National Research University. Working as seminar teacher 01.09.2014-30.06.2017, Associate professor 01.09.2017-30.06.2019, and Research fellow 01.01.2016-now. As seminar teacher and lecturer taught students a course of discrete mathematics (see below). As research fellow conducted research in the field of formal languages and automata theory on the border with computational complexity theory (see the list of publications below)
- 01.09.2012-
now
Moscow Institute of Physics and Technology. 01.09.2012-30.06.2017 Seminar teacher, 01.09.2017-30.06.2018 Senior Lecturer, 01.09.2018-now Associate Professor. Taught students various courses in computer science and higher mathematics (see the list below)
- 01.09.2008-
30.06.2017
Moscow School №25. As system administrator supported the local network and servers with the school website and SAMBA (free analogue of Microsoft Active Directory). Developed own platforms for fast backups and restore of PC's hdd images and SAMBA User's control (based on the open-source GNU/Linux programs). As a teacher (of additional education) taught students additional courses on mathematics and computer science

Education

- 22.12.2016 CANDIDATE OF SCIENCES (EQUIVALENT TO PH.D.) in discrete mathematics and mathematical cybernetics. Thesis “On regular realizability problem” defended at MIPT (adviser: M. N. Vyalyi).
- 01.09.2013-30.06.2016 STUDENT OF POSTGRADUATE SCHOOL at MIPT
- 01.09.2011-30.06.2013 MASTER OF SCIENCE in applied mathematics and physics, Department of Control and Applied Mathematics MIPT. Thesis “On regular realizability problem” (adviser: M. N. Vyalyi).
- 01.09.2007-30.06.2011 BACHELOR OF SCIENCE in applied mathematics and physics, Department of Control and Applied Mathematics MIPT. Thesis “On generalized nondeterminism automata model” (adviser: M. N. Vyalyi).

Grants, honors & awards

- 2020-2022 Russian Science Foundation grant 20-11-20203
- 2020-2022 RFBR grant 20-01-00645
- 2018-2019 RFBR grant 17-51-10005 (joint project with Royal Society, project code: IEC\R2\170123)
- 2017-2019 RFBR grant 17-01-00300
- 2016-2018 RFBR grant 16-01-00362
- 2014-2016 RFBR grant 14-01-00641
- 2011-2013 RFBR grant 11-01-00398-a

Publications & talks

- 2021a *On computational complexity of set automata*, joint paper with: M. N. Vyalyi // Information and Computation. 2021. Vol. 281. P. 104797
- 2021b *A Linear-Time Simulation of Deterministic d -Limited Automata* // Developments in Language Theory. Cham : Springer International Publishing, 2021. P. 342-354
- 2021c *Automata Equipped with Auxiliary Data Structures and Regular Realizability Problems*, joint paper with: M. N. Vyalyi // Descriptive Complexity of Formal Systems. Cham : Springer International Publishing, 2021. P. 150-162
- 2018a *A Structural Lemma for Deterministic Context-Free Languages* // Developments in Language Theory. Cham : Springer International Publishing, 2018. P. 553-565
- 2018b *On Emptiness and Membership Problems for Set Automata*, joint paper with: M. Vyalyi // Computer Science – Theory and Applications. Cham : Springer International Publishing, 2018. P. 295-307 (joint work with M. N. Vyalyi)
- 2017 *On Computational Complexity of Set Automata*, joint paper with: M. N. Vyalyi // Developments in Language Theory: 21st International Conference, DLT 2017, Liège, Belgium, August 7-11, 2017, Proceedings. Cham : Springer International Publishing, 2017. P. 332-344 (joint work with M. N. Vyalyi)
- 2015a *Regular Realizability Problems and Context-Free Languages*, joint paper with: M. N. Vyalyi // Descriptive Complexity of Formal Systems. Vol. 9118. Springer International Publishing, 2015. P. 256-267 (joint work with M. N. Vyalyi)
- 2015b *On regular realizability problems for context-free languages*, joint paper with: M. N. Vyalyi // Problems of Information Transmission. 2015. Vol. 51, no. 4. P. 349-360 (joint work with M. N. Vyalyi)
- 2014 *Regular realizability problems and context-free languages* // Abstracts of Reports and other materials of the 7th School “Computer Science Days in Ekaterinburg” (Aug. 23-25, 2014). Ekaterinburg, Russia : Ural University Press, 2014. P. 25-27
- 2012 *Algorithmic Decidability of Automata Behaviour Processing Infinite Words (in Russian)*, joint paper with: M. N. Vyalyi // Discrete Analysis and Operation Research. 2012. Vol. 19, no. 2. P. 3-18 (joint work with M. N. Vyalyi)

Teaching

2020-now	Ozon Masters: Practical Course on Algorithms (lecturer)
2019-now	Ozon Masters: Algorithms (lecturer)
2018-2019	Joint program of HSE and London School of Economics: discrete mathematics (in English, lecturer)
2018-now	MIPT: Discrete Mathematics (lecturer)
2018-now	MIPT: Fundamental Algorithms (lecturer)
2014-2020	HSE: Discrete Mathematics (lecturer since 2017)
2012-now	MIPT: Theory and Realization of Programming Languages
2017-2018	MIPT: Analytic geometry and linear algebra
2015-2016	Technosphere/Lomonosov MSU : Algorithms and Data Structures
2014-2017	MIPT: Calculus
2013-2017	MIPT: Algorithm and Computational Models
2013-2017	Lomonosov MSU: Formal Languages and Automata Theory
2008-2017	School №25: Mathematics
2008-2017	School №25: advanced courses in computer science

Service to the community

2018	Member of organizing committee of the 13th International Computer Science Symposium in Russia
2015-now	Statute Committee member of RCEATCS (Russian Chapter of European Association for Theoretical Computer Science)
2014-2017	First year students supervisor at DCAM MIPT

Selected skills in programming languages

C/C++, Python, Ruby/Ruby on Rails.