

Vitaly Aksenov

Curriculum Vitae

29 January 1994
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Research interests

Algorithmics and data structures
Parallel algorithms
Concurrent data structures
Combinatorial structures
Number theory

Education

- 2015-2018 **PhD of Computer Science**, *Team GALLIUM, INRIA and Paris 7, France*
Parallel computation and algorithms
- 2015-2018 **PhD of Computer Science**, *ITMO University, Russia*
Joint PhD program with Paris 7
- 2013-2015 **Masters of Computer Science**, *ITMO University, Russia, GPA – 4.9/5*
With honors
- 2014-2015 *Bioinformatics Institute*
- 2009-2013 **Bachelors of Computer Science**, *ITMO University, Russia, GPA – 5/5*
With honors
- 2005-2009 *Physics-Mathematical Lyceum #239*

Professional Experience

- September 2021- **Assistant Professor**, *ITMO University, Russia*
- 2018- **Researcher**, *ITMO University, Russia*
- 2019 **Post-doc**, *Team Alistarh, IST Austria, Austria*
Under the supervision of fabulous Dan Alistarh
- 2013-2018 **Junior researcher**, *Computer Technologies Lab, ITMO University, Russia*
Combinatorics and algorithmics
- 2013, **Software engineer intern**, *Team “Cache Client”, “Facebook, Inc.”, USA*
- July-October Maintaining Data Storage, supervisor: Drew Hoskins
- 2012-2013 **Software engineer intern**, *Department of search engine, “Mail.Ru”, Russia*
Language recognition of the phrase

Teaching

- 2021-present **Course on parallel algorithms and concurrent data structures, Lecturer, MIPT, Russia**
- 2020-present **Course on algorithms, Lecturer, ITMO University, Russia**
- 2019-present **Course on algorithms, Assistant, ITMO University, Russia**
- 2018-present **Cryptography, Assistant, ITMO University, Russia**
- 2017, **Course on algorithmics, Paris, France**
September- ENS Paris team qualified to ICPC World Finals
November
- 2017, April **1-week crash-course on algorithmics, ETH Zurich, Switzerland**
- 2016, **1-week crash-course on algorithmics, Toulouse University III, France**
December
- 2015, **1-week crash-course on algorithmics, ENS Lyon, France**
October
- 2015-present **Courses on Olympiads in Mathematics, ITMO University, Russia**
Students
- 2014-2015 **Mathematical analysis, Assistant, ITMO University, Russia**
- 2014, **1-week crash-course on algorithmics, Harbin University, China**
October
- 2009-2016 **Courses on Olympiads in Informatics, ITMO University, Russia**
Schoolchildren

Publications

- [1] V Aksenov and K Kokhas. "Domino tilings and determinants". In: *Journal of Mathematical Sciences* 200.6 (2014), pp. 647–653.
- [2] V Aksenov and K Kokhas. "Chip removal. Urban Renewal revisited". In: *Journal of Mathematical Sciences* 209.6 (2015), pp. 809–825.
- [3] V Aksenov and K Kokhas. "Calculation of Pfaffians by a Chip Removal". In: *Journal of Mathematical Sciences* 215.6 (2016), pp. 631–648.
- [4] U A Acar, V Aksenov, and S Westrick. "Brief Announcement: Parallel Dynamic Tree Contraction via Self-Adjusting Computation". In: *Proceedings of the 29th ACM Symposium on Parallelism in Algorithms and Architectures*. ACM. 2017, pp. 275–277.
- [5] V Aksenov, V Gramoli, P Kuznetsov, A Malova, and S Ravi. "A concurrency-optimal binary search tree". In: *European Conference on Parallel Processing*. Springer. 2017, pp. 580–593.
- [6] U A Acar, V Aksenov, A Charguéraud, and M Rainey. "Performance challenges in modular parallel programs". In: *Proceedings of the 23rd ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*. ACM. 2018, pp. 381–382.

- [7] V Aksenov, D Alistarh, and P Kuznetsov. "Brief-Announcement: Performance Prediction for Coarse-Grained Locking". In: *Proceedings of the thirty seventh annual ACM Symposium on Principles of distributed computing (PODC)* (2018), pp. 411–413.
- [8] V Aksenov, P Kuznetsov, and A Shalyto. "On Helping and Stacks". In: *Proceedings of NETYS* (2018).
- [9] V Aksenov, P Kuznetsov, and A Shalyto. "Parallel Combining: Benefits of Explicit Synchronization". In: *22nd International Conference on Principles of Distributed Systems (OPODIS 2018)* (2018), pp. 143–158.
- [10] U A Acar, V Aksenov, A Charguéraud, and M Rainey. "Provably and Practically Efficient Granularity Control". In: *Proceedings of the 34th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming* (2019), pp. 214–228.
- [11] Sergey Aganezov, Ilya Zban, Vitaly Aksenov, Nikita Alexeev, and Michael C Schatz. "Recovering rearranged cancer chromosomes from karyotype graphs". In: *BMC bioinformatics* 20.20 (2019), pp. 1–11.
- [12] Vitalii Aksenov, Dan Alistarh, and Janne H Korhonen. "Scalable Belief Propagation via Relaxed Scheduling". In: *Advances in Neural Information Processing Systems* 33 (2020).
- [13] Vitaly Aksenov, Dan Alistarh, Alexandra Drozdova, and Amirkeivan Mohtashami. "The Splay-List: A Distribution-Adaptive Concurrent Skip-List". In: *34th International Symposium on Distributed Computing*. 2020.
- [14] Nikita Koval and Vitaly Aksenov. "Restricted memory-friendly lock-free bounded queues". In: *Proceedings of the 25th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*. 2020, pp. 433–434.
- [15] Vitaly Aksenov, Ohad Ben-Baruch, Danny Hendler, Ilya Kokorin, and Matan Rusanovsky. "Execution of NVRAM Programs with Persistent Stack". In: *International Conference on Parallel Computing Technologies*. Springer. 2021, pp. 117–131.
- [16] Vitaly Aksenov, Vincent Gramoli, Petr Kuznetsov, Di Shang, and Srivatsan Ravi. "Optimal Concurrency for List-Based Sets". In: *International Conference on Parallel Computing Technologies*. Springer. 2021, pp. 386–401.
- [17] Evgeniy Feder, Ichha Rathod, Punit Shyamsukha, Robert Sama, Vitaly Aksenov, Iosif Salem, and Stefan Schmid. "Brief-Announcement: Lazy Self-Adjusting Bounded-Degree Networks for the Matching Model". In: *ACM Symposium on Parallelism in Algorithms and Architectures* (2021).
- [18] Ali Ramezani-Kebrya, Fartash Faghri, Ilya Markov, Vitalii Aksenov, Dan Alistarh, and Daniel M. Roy. "NUQSGD: Provably Communication-efficient Data-parallel SGD via Nonuniform Quantization". In: *Journal of Machine Learning Research* 22.114 (2021), pp. 1–43. URL: <http://jmlr.org/papers/v22/20-255.html>.

■ Talks

2015, February **“Combinatorial objects and their algebraic characteristics”**, *University of Geneva, Switzerland*

■ Professional Activities

- 2021 **Principles and Practice of Parallel Programming 2022**, *Virtual*
External Program Committee
- 2021, June **The Third Industrial Distributed Computing Conference Hydra 2021**, *Saint-Petersburg, Russia*
Program Committee
- 2021 **41st IEEE International Conference on Distributed Computing Systems**, *Virtual*
Program Committee
- 2020, July **The Second Industrial Distributed Computing Conference Hydra 2020**, *Saint-Petersburg, Russia*
Program Committee
- 2020, July **The Third Summer School on Practice and Theory of Distributed Computing**, *Saint-Petersburg, Russia*
Program Committee
- 2019, July **The First Industrial Distributed Computing Conference Hydra 2019**, *Saint-Petersburg, Russia*
Program Committee
- 2019, July **The Second Summer School on Practice and Theory of Distributed Computing**, *Saint-Petersburg, Russia*
Program Committee
- 2017, July **The First Summer School on Practice and Theory of Concurrent Computing**, *ITMO University, Russia*
Co-organizer

■ Courseworks

- 2014-2015 Denovo assembler using MapReduce. Supervisor: Maxim Mikheev, BioDatomics
- 2013-2014 Parallel SAT-solver based on physical system. Supervisor: Yuri Matiyasevich, RAS
- 2012-2013 Translation from picture of formulae to LaTeX
- 2012-2013 A fast algorithm for distinguishing Russian, Ukrainian and Kazakh languages by phrase
- 2011-2012 Specification of tests for ICPC Problems made for automatic generation. Supervisor: Maxim Buzdalov, ITMO University

■ Awards

- 2021 3rd place on North Countries Universities Mathematical Competition, coach
- 2016 “Deadline 24”, finalist

- 2015 Best ITMO University masters thesis award
- 2015 First prize on North Countries Universities Mathematical Competition, 6th place
- 2014 Student Grant of Saint-Petersburg Government
- 2014 First prize on International Mathematics Competition for University Students, 27th place
- 2014 First prize on North Countries Universities Mathematical Competition, 8th place
- 2014 15th place on final "Challenge 24"
- 2013 3rd place on Electronic Contest, 13th place on final. "Challenge 24"
- 2008-2009 All-Russian School Olympiad in Mathematics, Prize Winner
- 2009 All-Russian School Olympiad in Informatics, Prize Winner

Other activities

- 2017-present **Chief Judge**, *Bioinformatics Contest*
contest.bioinf.me
- 2016 **Scientific Committee**, *IOI*
- 2015-present **Software engineer**, *ICPC Live team on ACM ICPC World Finals*
<https://github.com/Aksenov239/icpc-live-v2>
- 2012-present **Jury member**, *ICPC, North Eurasia Regionals*
- 2011-2017 **Jury member**, *"Russian Code Cup"*
- 2010-present **Jury member**, *All Russian School Team Olympiad in Informatics*
- 2009-present **Jury member**, *St Petersburg School Olympiad in Informatics*
- 2010-2015 **Jury member**, *"Codeforces.ru"*
- 2013-2014 **Jury member**, *"Kotlin Cup"*

Languages

Russian	Native	
English	Intermediate	<i>FCE Certificate, Grade B</i>
French	Basics	