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, July-October **Software engineer intern**, *Team "Cache Client", "Facebook, Inc."*, USA.
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.

2019-present **Cryptography, Assistant**, *ITMO University*, Russia.

2017, September-November **Course on algorithmics**, *Paris*, France.
ENS Paris team qualified to ICPC World Finals

2017, April **1-week crash-course on algorithmics**, *ETH Zurich*, Switzerland.

2016, December **1-week crash-course on algorithmics**, *Toulouse University III*, France.

2015, October **1-week crash-course on algorithmics**, *ENS Lyon*, France.

2015-present **Courses on Olympiads in Mathematics**, *ITMO University*, Russia.
Students

2014-2015 **Mathematical analysis**, *ITMO University*, Russia.
1st year students

2014, October **1-week crash-course on algorithmics**, *Harbin University*, China.

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: *Accepted to PaCT* (2021).

[16] Vitaly Aksenov, Vincent Gramoli, Petr Kuznetsov, Di Shang, and Srivatsan Ravi. "Optimal Concurrency for List-Based Sets". In: *Accepted to PaCT* (2021).

[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, July **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, Ukranian and Kazakh languages by phrase

2011-2012 Specification of tests for ACM 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 *FCE Certificate, Grade B*

French Basics