Danil Sagunov

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Education

St. Petersburg Department of Steklov Institute of Mathematics of the Russian Academy of Sciences. 2019–present

Ph.D. student
- Advisor: Ivan Bliznets
- Major: Theoretical Computer Science

St. Petersburg Academic University of the Russian Academy of Sciences. 2017–2019

M.Sc., Department of Mathematics and Information Technology
- Thesis title: "Algorithms and Lower Bounds for the Target Set Selection Problem"
- Advisor: Ivan Bliznets
- Major: Theoretical Computer Science

Saratov State University. 2013–2017

Bachelor, Department of Mathematical Cybernetics and Computer Science
- Graduation project: "Graphs as a Representation of Program Output Context"
- Advisor: Alexander Ivanov
- Major: Software Engineering

Publications

[1] Fedor V. Fomin, Petr A. Golovach, William Lochet, Danil Sagunov, Kirill Simonov, and Saket Saurabh. **Detours in Directed Graphs**. In *39th International Symposium on Theoretical Aspects of Computer Science, STACS 2022, March 15-18, 2022, Marseille, France (Virtual Conference)*, 2022.

[2] Fedor V. Fomin, Petr A. Golovach, Danil Sagunov, and Kirill Simonov. **Algorithmic Extensions of Dirac's Theorem**. In *Proceedings of the 2022 Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 406–416.

[3] Dmitry Itsykson, Artur Riazanov, Danil Sagunov, and Petr Smirnov. **Near-Optimal Lower Bounds on Regular Resolution Refutations of Tseitin Formulas for All Constant-Degree Graphs**. *computational complexity*, 30(2), August 2021.

[4] Fedor V. Fomin, Petr A. Golovach, Lars Jaffke, Geevarghese Philip, and Danil Sagunov. **Diverse Pairs of Matchings**. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2020.

[5] Ivan Bliznets and Danil Sagunov. **Lower bounds for the happy coloring problems**. *Theoretical Computer Science*, 838:94–110, October 2020.

[6] Ivan Bliznets and Danil Sagunov. **Maximizing Happiness in Graphs of Bounded Clique-Width**. In *LATIN 2020: Theoretical Informatics*, pages 91–103. Springer International Publishing, 2020.

[7] Fedor V. Fomin, Danil Sagunov, and Kirill Simonov. **Building Large k-Cores from Sparse Graphs**. In Javier Esparza and Daniel Kráľ, editors, *45th International Symposium on Mathematical Foundations of Computer Science (MFCS*

2020), volume 170 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 35:1–35:14, Dagstuhl, Germany, 2020. Schloss Dagstuhl–Leibniz-Zentrum für Informatik.

[8] Ivan Bliznets and Danil Sagunov. **Lower Bounds for the Happy Coloring Problems**. In *Computing and Combinatorics - 25th International Conference, COCOON 2019, Xi'an, China, July 29-31, 2019, Proceedings*, pages 490–502, 2019.

[9] Ivan Bliznets and Danil Sagunov. **On Happy Colorings, Cuts, and Structural Parameterizations**. In *Graph-Theoretic Concepts in Computer Science - 45th International Workshop, WG 2019, Vall de Núria, Spain, June 19-21, 2019, Revised Papers*, pages 148–161, 2019.

[10] Ivan Bliznets and Danil Sagunov. **Solving Target Set Selection with Bounded Thresholds Faster than 2^n**. In Christophe Paul and Michal Pilipczuk, editors, *13th International Symposium on Parameterized and Exact Computation (IPEC 2018)*, volume 115 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 22:1–22:14, Dagstuhl, Germany, 2019. Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik.

Employment and Teaching

Senior Researcher, *JetBrains Research*, St. Petersburg, Russia. **2021-2022**

Junior Researcher, *St. Petersburg Department of Steklov Institute of Mathematics of the Russian Academy of Sciences*, St. Petersburg, Russia. **2019-present**

Algorithms and Computational Complexity Teacher, *Higher School of Economics*, St. Petersburg, Russia. **2019-present**
teaching students in computational complexity and modern algorithms

Algorithms and Theoretical Computer Science Teacher, *Saint Petersburg State University*, St. Petersburg, Russia. **2019-present**
teaching students in theoretical computer science

Algorithms and Programming Teacher, *Saratov State University*, Saratov, Russia. **2014–2017**
preparing students for programming contests

Problem Coordinator, *HackerRank*. **2016-2017**
preparing and testing programming contest rounds

Problem Coordinator, *Codeforces*. **2016**
preparing and testing programming contest rounds

Android Software Developer, *Displair Inc.*, Astrakhan, Russia. **2012**
developing low-level Android emulation software

Additional projects

School programming team coach, Saratov, Russia. **2016**

Jury member of regional stage of the All-Russian Olympiad in Informatics, Saratov, Russia. **2015–2016**

Jury member of regional stage of the All-Russian Team Olympiad in Informatics, Saratov, Russia. 2015–2016

Developer of The Mana World & Evol Online open-source projects, on-line. 2011–2019

Honors and awards

Eighth Place in Google Hash Code Final Round, Dublin, Ireland. 2018

Second Degree Diploma in ACM ICPC Northeastern Europe Subregional Contest, St. Petersburg, Russia. 2016

Fourteenth Place in The 40th Annual ACM-ICPC World Finals, Phuket, Thailand. 2016

Ninth Place in ACM ICPC Northeastern Europe Subregional Contest, St. Petersburg, Russia. 2015

Schools and conferences attended

14th Latin American Theoretical Informatics Symposium (LATIN 2020), on-line. January 2021

45th International Symposium on Mathematical Foundations of Computer Science (MFCS 2020), on-line. August 2020

The 25th International Computing and Combinatorics Conference (COCOON 2019), Xian, China. August 2019

45th International Workshop on Graph-Theoretic Concepts in Computer Science (WG 2019), Vall de Núria, Spain. June 2019

The 17th Annual Winter School in Algorithms, Graph Theory and Combinatorics, Finse, Norway. March 2019

ALGO 2018, Helsinki, Finland. August 2018

Summer School on Algorithms and Lower Bounds, Prague, Czech Republic. July 2018

Recent Advances in Algorithms (RAA 2018), St. Petersburg, Russia. May 2018

Talks

Algorithmic Extensions of Dirac's Theorem, *Frontiers of Parameterized Complexity*, on-line, talk record on YouTube. March 2021

Algorithmic Extensions of Dirac's Theorem, *Parameterized Complexity Seminar*, on-line, talk record on YouTube. February 2021

Maximizing Happiness in Graphs of Bounded Clique-Width, *14th Latin American Theoretical Informatics Symposium (LATIN 2020)*, on-line, talk record on YouTube. January 2021

Building Large k-Cores from Sparse Graphs, *45th International Symposium on Mathematical Foundations of Computer Science (MFCS 2020)*, on-line, talk record on YouTube. August 2020

Lower Bounds for the Happy Coloring Problems, *The 25th International Computing and Combinatorics Conference (COCOON 2019)*, Xian, China. August 2019

Lower Bounds for the Happy Coloring Problems, *The 25th International Computing and Combinatorics Conference (COCOON 2019)*, Xian, China. August 2019

On Happy Colorings, Cuts, and Structural Parameterizations, *45th International Workshop on Graph-Theoretic Concepts in Computer Science (WG 2019)*, Vall de Núria, Spain. June 2019

Parameterized Complexity of the Happy Coloring Problems, *The 17th Annual Winter School in Algorithms, Graph Theory and Combinatorics*, Finse, Norway. March 2019

Solving Target Set Selection with Bounded Thresholds Faster than 2^n., *IPEC 2018*, Helsinki, Finland. August 2018

Lower bounds and exact exponential algorithms for the Target Set Selection problem, *Workshop of Summer School on Algorithms and Lower Bounds, ICALP 2018*, Prague, Czech Republic. July 2018

Research interests

Exact algorithms, Parameterized complexity, Kernelization, Algortihms for NP-hard problems, Graph algorithms, Computational complexity

References

Ivan Bliznets (advisor), iabliznets@gmail.com.
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Fedor V. Fomin, fomin@ii.uib.no.
Department of Informatics at University of Bergen