

# Elena Arseneva (Khramtcova)

## Curriculum Vitae

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### Research interests

Algorithms and Data Structures, Computational and Discrete Geometry

### Professional Appointments

- Sep. 2018 – present **Assistant Professor**, *Department of Mathematics and Computer Science*, St Petersburg State University (SPbU), Russia.
- Aug. 2016 – Jul. 2018 **Postdoctoral researcher**, *Algorithms Research Group*, Department of Mathematics and Computer Science, Université libre de Bruxelles (ULB), Brussels, Belgium.
- Oct. 2011 – Jul. 2016 **Research and teaching assistant**, *Faculty of Informatics, Università della Svizzera Italiana (USI)*, Lugano, Switzerland.
- Sep. 2010 – Sep. 2011 **Junior Researcher**, *NEUROSCIENCE LAB.*, St Petersburg State University (SPbU), Russia.

### Education

- Oct. 2011 – Jul. 2016 **PhD**, *Faculty of Informatics, Università della Svizzera Italiana (USI)*, Lugano, Switzerland.  
Thesis title: *On the Hausdorff and Other Cluster Voronoi Diagrams*  
Supervisor: Prof. Evanthia Papadopoulou
- Sep. 2005 – Jul. 2010 **Specialist Diploma with Distinction**, *St Petersburg State University (SPbU), Russia*, Major: Mathematician and Software Engineer;  
GPA: 4.8/5.0.  
Thesis title: *Presaccadic peak detection problem in electrooculography method of eye-tracking*
- Sep. 2001 – Jun. 2005 **Graduate**, *Physics and Mathematics Lyceum 239*, St Petersburg,  
GPA: 4.5/5.0.

### Grants and Awards

- Jan. 2017 – Jul. 2018 **Early PostDoc Mobility fellowship**, *Swiss National Science Foundation (SNF)*.  
Project title: Computational geometry on convex polyhedral surfaces
- Sep. 2018 **Best Paper in Track 1: Combinatorial and Algorithmic Aspects**, *Graph Drawing'18*.  
Paper: *Pole Dancing: 3D Morphs for Tree Drawings* E. Arseneva, P. Bose, P. Cano, A. D'Angelo, V. Dujmovic, F. Frati, S. Langerman and A. Tappini

Sep. 2018 **Best Presentation**, *Graph Drawing'18*.  
Joint with Pilar Cano

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## Teaching, Mentoring, and University service

### Students

Boris Zolotov defended his BSc thesis June 2019.  
Topic: *Algorithmic Aspects of Alexandrov's Uniqueness Theorem*

Valentin Andreev Undergraduate

Alexandra Istomina Undergraduate

### Courses taught at SPbU (BSc, in Russian unless stated otherwise)

Spr 2019/20 (planned) Advanced Data structures (MSc, In English, proposed by me)  
Spr 2019/20 (planned), Modern methods in Theoretical Computer Science VI/VIII semester  
Spr 2018/19  
Spr 2019/20 (planned), Theoretical Computer Science II: Combinatorics (seminars)  
Spr 2018/19  
Fall 2019/20 (planned) Topics in geometric algorithms (proposed by me)  
Fall 2019/20 (planned), Theoretical Computer Science IV: Computational Complexity (seminars)  
Fall 2018/19  
Fall 2019/20 (planned), Advanced Computational Complexity (seminars)  
Fall 2018/19  
Fall, Spr 2018/19 Models of computations

### Invited minicourses

(planned) All You Wanted to Know about Dynamic Binary Search Trees (Computer  
September-October Science Club of St. Petersburg Department of Steklov Mathematical  
2019 Institute of Russian Academy of Sciences, Russia)

January 2019 Computational Geometry, an Introduction (gifted high-school students,  
center "Sirius", Sochi, Russia, in Russian)

### Teaching at ULB

Fall 2017/18 Geometric Algorithms (MSc): guest lectures

### Assisted courses at USI

Spring 2014/15 Geometric Algorithms (MSc)  
Spring 2013/14 Geometric Algorithms (MSc)  
Fall 2013/14 Topics in Algorithms (BSc)  
Spring 2012/13 Algorithms and Data Structures (BSc)  
Fall 2012/13 Topics in Algorithms (BSc)  
Spring 2011/12 Algorithms and Data Structures (BSc)

### Other activities at USI and SPbU

Sep. 2018 – present (SPbU) Responsible for the admission and advertising of the international  
part of MSc Program "Advanced Mathematics" (launching in Sep. 2019)

- July 2019 – present (SPbU) Member of Technical Committee of the Industrial Projects joint with Huawei
- July 2019 – present (SPbU) Member of the Selection Committee for Granting Scholarships at MSc Program “Advanced Mathematics”
- July, August 2015 (USI) Mentored a summer internship (UROP) for Andreia Faria Carvalho. Topic: *Visualizing the 3D Farthest-segment Voronoi diagram and its Gaussian Map*
- 2014/15 (USI) PhD students’ representative, Faculty of Informatics

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## Community service

- PC Chair EuroCG’21 (planned)
- Program committee CCCG’19, SOCG YRF’18, EuroCG’18, CCCG’17
- Reviewer journals: JOCG, ACM TSAS, CJTA; conferences: CSR’19, STACS’19, SODA’18, SOCG’18, WADS’17, SOCG’17, EuroCG’16, ISAAC’15, EuroCG’15
- Org. committee chair EuroCG’21 (planned)
- Org. committee ICM’2022, EuroCG’16
- Org. committee Second Trans-Siberian Workshop on Data Structures, 2019 (workshops)
- Selection committee Baltic Competition in Science and Engineering’ 2020 (planned)
- Governmental committee The President of Russian Federation Committee of Young Scientists, 2019 – present

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## Conference and invited talks

- 4.07.2019 *Reconstructing a convex polygon from its  $\omega$ -cloud*, 14th International Computer Science Symposium in Russia (CSR’19), Novosibirsk, Russia
- 6.11.2018 *Generalized Voronoi diagrams*, Student Seminar on Topology, Chebyshev Laboratory and SPbU, Russia
- 28.09.2018 *Pole Dancing: 3D Morphs for Tree Drawings*, 26th International Symposium on Graph Drawing and Network Visualization, Barcelona, Spain (Best Paper Award and Best Talk Award. Talk done with Pilar Cano)
- 23.03.2018 *Reconstructing a convex polygon from its  $\omega$ -cloud*, 34th European Workshop on Computational Geometry (EuroCG’17), Berlin, Germany
- 15.09.2017 *Searching edges in the overlap of two plane graphs*, Tohoku University, Sendai, Japan
- 30.08.2017 *Which convex polyhedra can be made by gluing regular hexagons?*, the 20th Japan Conference on Discrete and Computational Geometry, Graphs, and Games (JCDCG<sup>3</sup>’2017), Tokyo, Japan
- 14.08.2017 *Cluster Voronoi Diagrams, Stabbing Circles, and Searching Edges in Two Graphs*, Aalto University, Helsinki, Finland

- 2.08.2017 *Searching edges in the overlap of two plane graphs*, WADS'17: Algorithms and Data Structures 15th International Symposium, Newfoundland, Canada
- 8.06.2017 *Dynamic stabbing queries with sub-logarithmic local updates for overlapping intervals*, 12th International Computer Science Symposium in Russia (CSR'17), Kazan, Russia
- 5.04.2017 *Searching edges in the overlap of two plane graphs*, 33th European Workshop on Computational Geometry (EuroCG'17) Malmö, Sweden
- 13.04.2016 *Stabbing circles for sets of segments in the plane*, LATIN 2016: Theoretical Informatics - 12th Latin American Symposium, Ensenada, México
- 30.03.2016 *Stabbing circles for sets of segments in the plane*, 32th European Workshop on Computational Geometry (EuroCG'16), Lugano, Switzerland
- 8.10.2015 *On cluster Voronoi diagrams*, Eindhoven University of Technology (TU/e), Netherlands
- 1.10.2015 —————, Université Libre de Bruxelles, Belgium
- 21.06.2015 *Stabbing circles, Voronoi diagrams and duality*, Algorithmic methods laboratory, Steklov Institute of Mathematics, St. Petersburg, Russia
- 3.07.2015 *Stabbing circles for sets of segments in the plane*, 16th Spanish Meeting on Computational Geometry (EGC'15), Barcelona, Spain
- 18.03.2015 *Linear-Time Algorithms for the Farthest-Segment Voronoi Diagram and Related Tree Structures*, 31th European Workshop on Computational Geometry (EuroCG'15), Ljubljana, Slovenia
- 2.04.2014 *A Randomized Incremental Approach for the Hausdorff Voronoi Diagram of Non-crossing Clusters*, LATIN 2014: Theoretical Informatics - 11th Latin American Symposium, Montevideo, Uruguay
- 5.03.2014 *A simple RIC for the Hausdorff Voronoi Diagram of Non-crossing clusters*, 30th European Workshop on Computational Geometry (EuroCG'14), Ein-Gedi, Israel
- 18.02.2014 *Randomized Incremental Constructions for the Hausdorff Voronoi diagram of point clusters*, ESF EuroGIGA final conference, Berlin, Germany
- 10.07.2013 *On Hausdorff Voronoi diagram of non-crossing clusters*, ESF EuroGIGA meeting, Graz, Austria
- 19.03.2013 *Randomized incremental construction of Hausdorff Voronoi diagram of non-crossing clusters*, 29th European Workshop on Computational Geometry (EuroCG'13), Braunschweig, Germany

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## Research visits, workshops, and summer schools

- (planned) 25.08.2019 – 30.08.2019 Schloss Dagstuhl Seminar 19352 *Computation in Low-Dimensional Geometry and Topology*, Dagstuhl, Germany
- 15-18.07.2019 Universitat Politècnica de Catalunya, Barcelona, Spain; Visiting: Rodrigo Silveira, Pilar Cano
- 3-7.06.2019 Università della Svizzera Italiana (USI), Lugano, Switzerland; Visiting: Evanthia Papadopoulou

- 26.06.2019 – 8.07.2019 *Second Trans-Siberian Workshop on Data Structures* Russia
- 10-15.03.2019 *Seventh Workshop on Geometry and Graphs*, Bellairs Research Institute, Holetown, Barbados
- 2-19.03.2019 Universitat Politècnica de Catalunya, Barcelona, Spain; Visiting: Vera Sacristán, Rodrigo Silveira, Pilar Cano, Carlos Seara
- 22.09.2018 – 2.10.2018 Universitat Politècnica de Catalunya, Barcelona, Spain; Visiting: Vera Sacristán, Rodrigo Silveira, Carlos Seara
- 15.04.2018 – 19.05.2018 *Intensive Research Program in Discrete, Combinatorial and Computational Geometry*, Barcelona, Spain
- 11-16.03.2018 *Sixth Annual Workshop on Geometry and Graphs*, Bellairs Research Institute, Holetown, Barbados
- 1-10.03.2018 Carleton University, Ottawa, Canada; Visiting: Prosenjit Bose
- 16.12.2017 – 18.02.2018 ITMO University, Saint-Petersburg, Russia; Visiting: Kira Vyatkina
- 4-15.09.2017 Tohoku University, Sendai, Japan; Visiting: Matias Korman
- 31.07.2017 – 4.08.2017 Fields Workshop on Discrete and Computational Geometry, Ottawa, Canada
- 22-26.05.2017 Summer school: *Recent Advances in Algorithms*, Saint-Petersburg, Russia
- 28.11-2.12.2016 Workshop: *Uncertainty in Motion*, U. Utrecht, the Netherlands
- 2-10.10.2016 U. Helsinki, Finland; Visiting: Simon Puglisi
- 5-16.09.2016 U. Utrecht, the Netherlands; Visiting: Maarten Löffler
- 17-30.04.2016 Carleton University, Ottawa, Canada; Visiting: Prosenjit Bose
- 10-16.10.2015 CMO-BIRS Workshop: *Searching and Routing in Discrete and Continuous Domains*, Oaxaca, Mexico
- 7-8.10.2015 U. Utrecht and TU. Eindhoven, the Netherlands; Visiting: Irina Kostitsina, Maarten Löffler, Bettina Speckmann
- 30.09.2015 – 6.10.2015 Université Libre de Bruxelles, Belgium; Visiting: Stefan Langerman
- 8-13.03.2015 *Third Annual Workshop on Geometry and Graphs*, Bellairs Research Institute, Holetown, Barbados
- 29-30.06.2015 Universitat Politècnica de Catalunya, Barcelona, Spain; Visiting: Carlos Seara

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### Hosted research visits

- 26-28.06 2019 St. Petersburg part of the 2nd Trans-siberian workshop.  
Visitors: Stefan Langerman, John Iacono, Grigorios Koumoutsos (Université Libre de Bruxelles, Belgium)
- 16-18.08.2017 Visitors: Ivor van der Hoog, Maarten Löffler (U. Utrecht, the Netherlands)

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### Patents

D. Belov, E. Khramtcova, A. Ossadtchi. A program for epilepsy diagnostics through EEG (EpiEEG). Patent number 2011616293, Russian Federation. Rightholder: Saint-Petersburg State University

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## Programming skills

Languages C/C++, Python, Sage, Matlab, Mathematica, Java/JScript, HTML/XML, SQL, Pascal  
Libraries CGAL library  
Markup, Markdown Latex, Hugo

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## Languages

Russian Mother tongue  
English Proficient  
Italian Intermediate  
German Beginners level  
French Beginners level

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## Personal information

Date of birth 12.03.1988  
Nationality Russian  
Children Evgeniia, born: April 2008  
Viktor, born: November 2009