Elena Arseneva (Khramtcova)

Curriculum Vitae

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Research interests

Computational and Discrete Geometry, Geometric Algorithms and Data structures

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Professional Appointments

Oct. 2022 – present	**Research Collaborator**, *Faculty of Informatics, Università della Svizzera Italiana (USI)*, Lugano, Switzerland.
Aug. 2021 – Mar. 2022	**Coordinator at St Peterburg University**, Leonhard Euler International Mathematical Institute (EIMI), Russia.
Jan. 2018 – Aug. 2022	**Associate Professor**, *Department of Mathematics and Computer Science*, St Petersburg State University (SPbU), Russia.
Sep. 2018 – Jan. 2020	**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

Oct. 2022 – present	**SAR fellowship**, *Swiss National Science Foundation (SNSF)*.
Jan. 2020 – Dec. 2022	**"a"**, *Russian Foundation for Basic Research (RFBR)*, participant.
	Project title: Problems on the Border of Combinatorics and Computatopnal Geometry
Sep. 2019 – Sep. 2021	**"Leader 2019"**, *the Foundation for the Advancement of Theoretical Physics and Mathematics "BASIS", Russia*, participant.
	Project title: Interactions between Combinatorics and Geometry
Jan. 2017 – Jul. 2018	**Early PostDoc Mobility fellowship**, *Swiss National Science Foundation (SNSF)*, personal grant.
	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

Industrial projects

Jan. 2021 – Dec. 2021	**"Automated Multi-Layer PCB Wiring"**, *a project of the Joint Laboratory SPbU - Huawei*, team leader.

Teaching, Mentoring, and University service

Postdocs

Rahul Gangopadhyay	

PhD Students

Boris Zolotov	(co-supervised with Wolfgang Mulzer)

Master Students

Daria Blinova	
Boris Zolotov	Defended his MSc thesis June 2021.
	Topic: *Algorithms for Dynamic Voronoi Diagrams*

Undergraduate Students

Boris Zolotov	Defended his BSc thesis June 2019.
	Topic: *Algorithmic Aspects of Alexandrov's Uniqueness Theorem*
Alexandra Istomina	Defended her BSc thesis June 2021.
	Topic: *On Morphing Tree Graph Drawing in 2D and 3D*

Co-teaching at USI

Fall 2022/23	Algorithms and Complexity (MSc)
Fall 2022/23	Algorithms and Data Structures (BSc)

Teaching at SPbU (in Russian unless stated otherwise)

Spr 2021/22	Geometric algorithms 2 Seminar (proposed by me)

Fall 2021/22	Mathematical Foundations of Algorithms:Computational complexity (BSc III Semester seminars)
Spr 2020/21	Mathematical Foundations of Algorithms (BSc II Semester seminars)
Fall 2020/21	Graph Drawing Seminar (BSc + MSc, proposed by me)
Spr 2019/20	Advanced Data structures (MSc, proposed by me)
Spr 2019/20, Spr 2018/19	Modern methods in Theoretical Computer Science BSc VI/VIII semester + MSc
Spr 2019/20, Spr 2018/19	Theoretical Computer Science II: Combinatorics (seminars)
Fall 2020/21, Fall 2019/20	Geometric algorithms Seminar (proposed by me)
Fall 2020/21, Fall 2019/20, Fall 2018/19	Theoretical Computer Science IV: Compuational Compexity (seminars)
Fall 2019/20, Fall 2018/19	Advanced Computational Compexity (seminars)
Fall, Spr 2018/19	Models of computations Seminar

Invited minicourses

September-October 2019	Pointer-Based Data Structures (Computer Science Club of St. Petersburg Department of Steklov Mathematical 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, Spr 2013/14	Geometric Algorithms (MSc)
Fall 2013/14, Fall 2012/13	Topics in Algorithms (BSc)
Spr 2012/13, Spr 2011/12	Algorithms and Data Structures (BSc)

Other activities at USI and SPbU

Aug. 2021 – present	Coordinator of the Leonhard Euler Mathematical Institute at SPbU
2018	(SPbU) Responsible for the admission and advertising of the international part of MSc Program "Advanced Mathematics" (launching in Sep. 2019)
July 2019 – Feb. 2020	(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

Community service

member of local organizing committee	ICM'2022 ***relocated and changed the org. committee due to the invasion of Russia to Ukraine in February 2022***
PC co-Chair, Organising committee chair	EuroCG'21
Program committee	SOCG'23, EuroCG'23, ICCG'21, CSR'21, EuroCG'20, CCCG'19, SOCG YRF'18, EuroCG'18, CCCG'17
Reviewer	journals: TCS, JGAA, JOCG, ACM TSAS, CGTA; conferences: WAL-COM'22, CSR'19, STACS'19, SODA'18, SOCG'18, WADS'17, SOCG'17, EuroCG'16, ISAAC'15, EuroCG'15
Org. committee chair	EuroCG'21
Org. committee	ICM'2022, EuroCG'16
Org. committee (workshops)	Second Trans-Siberian Workshop on Data Structures, 2019
Governmental committee	The President of Russian Federation Commitee of Young Scientists, 2019 – 2020 ***Expelled without explaining reasons in August 2020***

Conference and invited talks

1.03.2021	*Upward Point Set Embeddings of Paths and Trees*, 15th WALCOM 2021, Zoom
16.09.2020	*Voronoi diagrams and related structures in computer graphics and geometry processing. A survey*, Huawei Cyberverse related 3D algorithms and optimization workshop, Zoom
4.08.2020	*Geometric algorithms: generalized Voronoi diagrams*, Chebyshev lab. SPbU seminar "Industrial Mathematics", Zoom
4.07.2019	*Reconstructing a convex polygon from its ω-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 ω-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[3]'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

Research visits, workshops, and summer schools

(planned) 21-26.05.2023	Schloss Dagstuhl Seminar 23211 *Scalable Data Structures*
2-7.05.2021	Schloss Dagstuhl Seminar 21181 *Computation Geometry*, Online
15-18.02.2021	Schloss Dagstuhl Seminar 21071 *Scalable Data Structures*, Online
31.01.2020 – 7.02.2020	*Eighth Workshop on Geometry and Graphs*, Bellairs Research Institute, Holetown, Barbados
25.08.2019 – 30.08.2019	Schloss Dagstuhl Seminar 19352 *Computation in Low-Dimensional Geometry and Topology*, Dagstuhl, Germany
15-18.07.2019	Universitat Politécnica 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 Politécnica de Catalunya, Barcelona, Spain; Visiting: Vera Sacristán, Rodrigo Silveira, Pilar Cano, Carlos Seara
22.09.2018 – 2.10.2018	Universitat Politécnica 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. Urtecht, 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 Politécnica de Catalunya, Barcelona, Spain; Visiting: Carlos Seara

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)

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

Programming skills

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

Languages

Russian	Mothertongue
English	Proficient
Italian	Intermediate
German	Beginners level
French	Beginners level

Personal information

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