

Vissarion FISIKOPOULOS

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PERSONAL DATA

Born: 1983, Greece

Gender: Male

Citizenship: Greek

RESEARCH INTERESTS

- High-dimensional Computational Geometry
- Algorithm Engineering
- Randomized Geometric Algorithms
- Computational Algebraic Geometry

EDUCATION

- 2011 - 2014 **Ph.D.** “High-dimensional polytopes defined by oracles: algorithms, computations and applications”, University of Athens
(*expected*) Advisor: Prof. Ioannis Z.Emiris
- 7/2012 Visitor PhD student, Theory of Combinatorial Algorithms Group, ETH Zurich
- 2009 **M.Sc.** “Logic, Algorithms and Computation”, University of Athens
- 7-8/2009 Internship, Geometrica Research Group, INRIA Sophia-Antipolis, France
- 2007 **Diploma** (5-year-degree) “Computer Engineering and Informatics”, University of Patras
- 2001 Secondary Education: 2nd Public Lyceum of Ilioupolis, Athens

PUBLICATIONS

In progress / Submitted

1. Approximate volume computation for polytopes: a practical study.
Joint with I.Z.Emiris (In progress)
2. Efficient edge skeleton computation for polytopes defined by oracles.
Joint with I.Z.Emiris and B.Gaertner. (In progress)
3. Faster geometric algorithms via dynamic determinant computation.
Joint with L.Peñaranda. (Submitted to Journal)

Peer-reviewed Journals

1. An oracle-based, output sensitive algorithm for projections of resultant polytopes.
Joint with I.Z.Emiris, C.Konaxis and L.Peñaranda.
In International Journal of Computational Geometry and Applications (IJCGA), special issue (To appear)

Peer-reviewed Conferences

1. Combinatorics of 4-dimensional resultant polytopes.
Joint with A.Dickenstein and I.Z.Emiris.
In Proc. of the 38th ACM Symp. on Symbolic and Algebraic Computation (ISSAC '13), Boston, MA, USA.

2. Faster geometric algorithms via dynamic determinant computation.
Joint with L.Peñaranda.
In Proc. of European Symposium on Algorithms (ESA '12), Ljubljana, Slovenia.
3. An output-sensitive algorithm for computing projections of resultant polytopes.
Joint with I.Z.Emiris, C.Konaxis and L.Peñaranda.
In Proc. of 28th ACM Symp. on Comput. Geometry (SoCG '12), NC, USA.

Other conferences and workshops

1. A software framework for computing Newton polytopes of resultants and (reduced) discriminants. *Joint with I.Z.Emiris and C.Konaxis. 12th International Conference on Effective Methods in Algebraic Geometry (MEGA 2013), Frankfurt, Germany (poster).*
2. Efficient volume and edge-skeleton computation for polytopes given by oracles. *Joint with I.Z.Emiris and B.Gaertner. In Proc. of 29th European Workshop on Computational Geometry (EuroCG13), Braunschweig, Germany, 2013.*
3. Optimizing the computation of sequences of determinantal predicates. *Joint with I.Z.Emiris and L.Peñaranda. In Proc. of 28th European Workshop on Computational Geometry (EuroCG12), Assisi, Perugia, Italy, 2012.*
4. Exact and approximate algorithms for resultant polytopes. *Joint with I.Z.Emiris and C.Konaxis. In Proceedings of 28th European Workshop on Comput. Geometry (EuroCG12), Assisi, Perugia, Italy, 2012.*
5. In silico tomographic image generation using Monte Carlo and computational geometry. *Joint with K.Eftaxias and G.M.Spyrou. 10th IEEE Intern. Conf. Inf. Techn. & Applic. in Biomed. (ITAB) 2010.*
6. Meshing of Triply-Periodic Smooth Surfaces in CGAL. *Joint with M.Caroli and M.Teillaud. Seventh International Conference on Curves and Surfaces, Avignon, France, 2010 (poster).*
7. Regular triangulations and resultant polytopes. *Joint with I.Z.Emiris and C.Konaxis. In Proc. of 26th European Workshop on Comput. Geometry (EuroCG10), Dortmund, Germany, 2010.*

Technical reports, manuscripts, etc.

1. An oracle-based, output-sensitive algorithm for projections of resultant polytopes. *Joint with I.Z.Emiris, C.Konaxis and L.Peñaranda. Technical Report CGL-TR-28, October 2012.*
2. High-dimensional predicates: Algorithms and software. *Joint with I.Z.Emiris and L.Peñaranda. Technical Report CGL-TR-27, October 2012.*
3. Optimizing the computation of sequences of determinantal predicates. *Joint with I.Z.Emiris and L.Peñaranda. Technical Report CGL-TR-14, October 2011.*
4. An output-sensitive algorithm for computing projections of resultant polytopes. *Joint with I.Z.Emiris and C.Konaxis. Technical Report CGL-TR-08, October 2011.*
5. Theoretical results on query processing for RDF/SPARQL with time and space. *Joint with M.Koubarakis, C.Nikolaou. Technical Report TELEIOS-D2.3, 2011.*
6. Enumerating classes of regular triangulations. *Fall School Shapes, Geometry, and Algebra (SAGA) Kolympari, Greece, 2010 (poster).*
7. An implementation of range trees with fractional cascading in C++. *Univ. of Athens. arXiv:1103.4521, 2009. Computational Geometry course 2008 (advisor: Ioannis Z.Emiris)*
8. Representation of complete and incomplete temporal constraint information in relational database systems. *Theory of Databases course 2008 (advisor: Manolis Koubarakis)*

Theses

1. Triangulations of point sets, high dimensional polytopes and applications. *Master's thesis at university of Athens, 2010. (advisor: Ioannis Z.Emiris)*
2. Study of the effect of cost policies in the convergence of selfish strategies in pure Nash equilibria in congestion games. *Diploma thesis at university of Patras, 2007. (advisor: Paul Spirakis)*

PROFESSIONAL EXPERIENCE

- 02/2011 - present : | **Research Assistant** in “Computational Geometric Learning” (CGL), ICT (European Union) Ph.D. funding
- 4-12/2010 : | **Research Assistant** in “Semantic Sensor Grids” (SemSorGrid4Env), ICT (European Union)
- 7-8/2009: | **Internship**, “Meshing of periodic minimal surfaces”, Advisor: Dr. M.Teillaud, Geometrica French National Institute for Research in Computer Science (INRIA), Sophia-Antipolis
- 2007 - 2008: | **Developer** at Business Web Solutions, Patras, Greece
“Development of multiuser platform for internet applications (PHP, Action-script)”

TEACHING EXPERIENCE

- 2009 - present: | **Teaching Assistant**, Department of Informatics & Telecoms, University of Athens
- Computational Geometry (undergrad/grad course) (4 years: 2010-2013)
 - Foundations of Databases (grad course) (2009)
- 2009 - 2011: | **Teacher** in “Prisma secondary private school”; course: “Algorithms”

SELECTED TALKS

(c): conference, (i): invited, (s): seminar, (w): workshop

1. (w) “Efficient Edge-Skeleton Computation for Polytopes Defined by Oracles”, Athens Coll. Algorithms & Compl., 2013.
2. (c) “Combinatorics of 4-dimensional resultant polytopes”, ISSAC, Boston USA, 2013.
3. (is) “Efficient Edge-Skeleton and Volume Computation for Polytopes Defined by Oracles”, DMO, McGill, 2013.
4. (w) “Efficient volume and edge-skeleton computation for polytopes given by oracles“ EuroCG, Braunschweig, 2013.
5. (c) “Faster Geometric Algorithms via Dynamic Determinant Computation.” ESA, Ljubljana, 2012.
6. (w) “Computing the volume of the discriminant polytope.” Athens Coll. Algorithms & Compl., 2012.
7. (is) “Constructing Polytopes via a Vertex Oracle.” Mittagseminar ETH Zurich, 2012.
8. (c) “An output-sensitive algorithm for computing projections of resultant polytopes.” SoCG, NC USA, 2012.
9. (w) “Exact and approximate algorithms for resultant polytopes.” EuroCG, Assisi, 2012.
10. (w) “Enumerating Classes of Regular Triangulations.” Athens Coll. Algorithms & Compl., 2010.
11. (w) “Regular triangularions & resultant polytopes.” EuroCG, Dortmund, 2010.

SERVICE

Reviewer

- SIAM Algorithm Engineering and Experiments (ALENEX), European Symposium on Algorithms (ESA), Effective Methods in Algebraic Geometry (MEGA), Algorithmica Journal.

TECHNICAL SKILLS

PROGRAMMING: C, C++, Java, Python, Lisp, Unix shell scripting, WWW/Databases (PHP, SQL, Javascript, HTML, CSS, XML/XSL), Matlab, Maple, Flex/Bison, Assembly

LANGUAGE SKILLS

GREEK: native: (mother tongue)
ENGLISH: fluent: (First Certificate in English (FCE), University of Cambridge)
GERMAN: basic: (Zertifikat Deutsch als Fremdsprache (ZDaF), Goethe Institut)

REFERENCES

- Prof. Dr. Alicia Dickenstein
Department of Mathematics
University of Buenos Aires
<http://mate.dm.uba.ar/~alidick>
- Prof. Dr. Ioannis Z. Emiris
Dept. of Informatics and Telecommunications
University of Athens
<http://www.di.uoa.gr/~emiris>
- Prof. Dr. Michael Joswig
Department of Mathematics
Technical University Berlin
<http://page.math.tu-berlin.de/~joswig/>
- Dr. Bernd Gärtner
Institute of Theoretical Computer Science
ETH Zurich
<http://www.inf.ethz.ch/personal/gaertner>
- Dr. Monique Teillaud
Geometrica Team
INRIA Sophia Antipolis - Méditerranée
<http://www-sop.inria.fr/members/Monique.Teillaud/>

MISCELLANEOUS

Event Organization

- Final Research Workshop of EU project “Computational Geometry Learning”, Vravrona, Greece, 2013
- 7th Athens Colloquium on Algorithms and Complexity University of Athens, Athens, Greece, 2012
- Fall School “ShApes, Geometry and Algebra (SAGA)”, Kolympari, Greece, October 4-8 2010

Professional Membership

- Technical Chamber of Greece (TEE-TCG), ACM Symbolic and Algebraic Manipulation