

Virginia Panayotova Vassilevska

Curriculum Vitae

Institute for Advanced Study
School of Mathematics
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Education

B.S. California Institute of Technology, 2003, double major in mathematics and engineering and applied science (CS), with honor

M.S. Carnegie Mellon University, 2007, computer science

Ph.D. Carnegie Mellon University, 2008, computer science,
advisor: Guy Blelloch,
thesis title: *Efficient Algorithms for Path Problems in Weighted Graphs*

Awards and Honors

- Selected as a Computing Innovation Fellow 2009–2010;
- Paper invited to the special issue of SODA 2008 in Transactions on Algorithms (TALG);
- Carnegie Mellon School of Computer Science Anonymous Graduate Fellowship, 2005–2008;
- Invited to participate in China Theory Week 2008;
- Student Travel Awards (sponsored by IBM for SODA 2008 and by SIAM for the Workshop on Combinatorial Scientific Computing, 2004)
- NSF Honorable Mention;
- **Herbert Ryser Award** in Mathematics – Caltech, May 2002;
- Upper Class Merit Award (Carnation Merit Award) – 2001–2002, 2002–2003;
- Named Arthur R. Adams Summer Undergraduate Research Fellow – Summer 2002, and Marcella Bonsall Summer Undergraduate Research Fellow – Summer 2001;
- Member of the Tau Beta Pi Honor society – 2002–present.

Work Experience

- Postdoctoral Scholar at UC Berkeley, starting Sept. 2009
- Postdoctoral Scholar – member at the Institute for Advanced Study, Sept. 2008–Sept. 2009
- Summer Internship at TTI–Chicago (2006)
- Summer Internship at LBNL (2003)
- Laboratory Assistant in biochemistry lab (2000, 2001)
- Summer Research Fellowships at Caltech: in biochemistry (2000), in mathematics (2001, 2002)

Research Experience

- Sept. 2009 - Sept. 2010* Postdoctoral scholar and Computing Innovation Fellow at UC Berkeley.
- Sept. 2008 - Sept. 2009* Member at the Institute for Advanced Study.
- Aug. 2003 - Aug. 2008* Graduate study in theoretical computer science, specializing in graph algorithms and data structures; advised by Prof. Guy Blelloch at the computer science department of Carnegie Mellon University.
- June - Aug. 2006* Summer Internship at the Toyota Technological Institute, Chicago – worked with Dr. Umut Acar on problems in data structures and dynamic algorithms.
- June - Aug. 2003* Summer Internship at the Lawrence Berkeley Lab - worked with Dr. Ali Pinar on improving the cache performance of sparse matrix operations by grouping nonzeros in dense blocks.
- July - Oct. 2002* Summer Undergraduate Research Fellowship at Caltech - worked with Prof. Richard Wilson and with Mark Bilinski on determining the crossing number of $K_{9,9}$.
- June - Sept. 2001* Summer Undergraduate Research Fellowship at Caltech - worked with Prof. Richard Wilson on graceful labeling and on dynamic Huffman coding algorithms.

Teaching

- TA for Graduate Algorithms 2005 - created and graded homeworks and exams; held office hours
- TA for Undergraduate Algorithms 2007 - taught weekly recitation, created and graded homeworks and exams

Citizenships: USA, BG

Related Skills

- Programming Languages: C, C++, Java, OCaml, Lisp, Scheme
- Text Formatting: \LaTeX , HTML, CSS
- Languages: Bulgarian, English, German, Russian

Peer-Refereed Conference Publications

- *Fixing a tournament*, V. Vassilevska, under submission.
- *Finding, Minimizing and Counting Weighted Subgraphs*, V. Vassilevska and Ryan Williams, STOC 2009.
- *A New Combinatorial Approach to Sparse Graph Problems*, Guy Blelloch, V. Vassilevska, Ryan Williams, ICALP 2008.
- *Uniquely Represented Data Structures for Computational Geometry*, Guy Blelloch, Daniel Golovin, V. Vassilevska, SWAT 2008.
- *Nondecreasing Paths in a Weighted Graph or: How to Optimally Read a Train Schedule*, V. Vassilevska, SODA 2008, **invited to special issue of TALG**.
- *All Pairs Bottleneck Paths in General Graphs in Truly Subcubic Time*, V. Vassilevska, Ryan Williams, Raphael Yuster, STOC 2007.
- *Finding the Smallest H -Subgraph in Real Weighted Graphs and Related Problems*, V. Vassilevska, Ryan Williams, Raphael Yuster, ICALP 2006.
- *Finding a Maximum Weight Triangle in Sub-Cubic Time, With Applications*, V. Vassilevska and Ryan Williams, STOC 2006.
- *Confronting Hardness Using A Hybrid Approach*, V. Vassilevska, Ryan Williams and Shan Leung Maverick Woo, SODA 2006.
- *Explicit Inapproximability Bounds for the Shortest Superstring Problem*, V. Vassilevska, MFCS 2005.

Peer-Refereed Journal Publications

- *Nondecreasing Paths in a Weighted Graph or: How to Optimally Read a Train Schedule*, V. Vassilevska, invited and submitted to **TALG**, special issue dedicated to the best papers of SODA 2008.
- *All Pairs Bottleneck Paths and Max-Min Matrix Products in Truly Subcubic Time*, V. Vassilevska, Ryan Williams, Raphael Yuster, Theory of Computing, accepted 2009.
- *Efficient Algorithms for Clique Problems*, V. Vassilevska, Information Processing Letters, 2008.
- *Finding Heaviest H -Subgraphs in Real Weighted Graphs, with Applications*, V. Vassilevska, Ryan Williams, Raphael Yuster, Transactions on Algorithms (TALG), accepted 2008.
- *Finding Nonoverlapping Dense Blocks of a Sparse Matrix*, Ali Pinar, V. Vassilevska, the special issue of ETNA on Combinatorial Scientific Computing, 2005.

Unpublished Manuscripts and Technical Reports

- *Uniquely Represented Data Structures for Computational Geometry*, Guy Blelloch, Daniel Golovin, V. Vassilevska, CMU Technical Report CMU-CS-08-115, 2008.
- *Ordered Subsets with Applications*, Guy Blelloch, V. Vassilevska, 2007.
- *A Two Player Game to Combat WebSpam*, Michelle Goodstein, V. Vassilevska, CMU Technical Report CMU-CS-07-134, 2007.
- *Traceable Data Structures*, Umut Acar, Guy Blelloch, Srinath Sridhar, V. Vassilevska, 2006.
- *A New Dynamic Algorithm for Planar Point Location*, Guy Blelloch, Srinath Sridhar, V. Vassilevska, 2005.
- *Confronting Hardness Using A Hybrid Approach*, V. Vassilevska, Ryan Williams and Shan Leung Maverick Woo, CMU Technical Report CMU-CS-05-125, 2005.

Invited Talks

- *A Matrix Product Approach to Weighted Graph Problems*, California Institute of Technology, Computer Science Seminar, Pasadena, CA, 2007.
- *Algorithms for Path Problems*, University of Rochester, Rochester, NY, 2008.
- *Nondecreasing Paths in Weighted Graphs; Or: How to Optimally Read a Flight Schedule*, Rochester Institute of Technology, Rochester, NY, 2008.
- *Nondecreasing Paths in Weighted Graphs; Or: How to Optimally Read a Flight Schedule*, Tsinghua University, China Theory Week, Beijing, China, 2008.
- *Matrix Products and All Pairs Path Problems*, Princeton University, Intractability Center Meeting, Princeton, NJ, 2008.
- *Detecting, Finding and Minimizing Weighted Triangles*, Rutgers University, DIMACS Seminar, New Brunswick, NJ, 2009.
- *Detecting, Finding and Minimizing Weighted Triangles*, University of Toronto, Toronto, Ontario, Canada, 2009.
- *Detecting, Finding and Minimizing Weighted Triangles*, University of Pennsylvania, Philadelphia, PA, 2009.
- *Finding Patterns in Graphs*, Lawrence Livermore National Laboratory, 2009.
- *Finding Patterns in Graphs*, Sandia National Laboratory, 2009.
- *Matrix Products and Subgraph Problems*, Institute for Advanced Study, 2009.

Service

- Co-organized and co-taught a course on theoretical computer science for high school students for the Governor's school of New Jersey (*Wonderful and Crazy Ideas in Theoretical Computer Science and Math*).
- Reviewer for AAAI, FOCS, SODA, ICALP, TALG, IJCAI, SICOMP, IPL

- CMU Speakers Club
- Graduate admissions committee, CMU
- Roadshows, Grad School Applications Workshop, Women at SCS, CMU
- Graduate Panel for CMU Grad Women's organization
- Student volunteer, FOCS 2005

References

Guy Blelloch

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