

# 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 honors

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

- 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 – member at the Institute for Advanced Study, Sept. 2008–now
- 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

<i>Sept. 2008 - now</i>	Member at the Institute for Advanced Study.
<i>Aug. 2003 - Aug. 2008</i>	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.
<i>June - Aug. 2006</i>	Summer Internship at the Toyota Technological Institute, Chicago – worked with Dr. Umut Acar on problems in data structures and dynamic algorithms.
<i>June - Aug. 2003</i>	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.
<i>July - Oct. 2002</i>	Summer Undergraduate Research Fellowship at Caltech - worked with Prof. Richard Wilson and with Mark Bilinski on determining the crossing number of $K_{9,9}$ .
<i>June - Sept. 2001</i>	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

**Citizenship:** USA

## Related Skills

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

## Peer-Refereed Publications

- *Fixing a tournament*, V. Vassilevska, under submission.
- *All Pairs Bottleneck Paths and Max-Min Matrix Products in Truly Subcubic Time*, V. Vassilevska, Ryan Williams, Raphael Yuster, Theory of Computing, 2009.
- *Finding, Minimizing and Counting Weighted Subgraphs*, V. Vassilevska and Ryan Williams, STOC 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), 2008.
- *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.
- *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.

## Service

- 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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Computer Science Department  
Carnegie Mellon University  
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email: [guyb@cs.cmu.edu](mailto:guyb@cs.cmu.edu)

### **Manuel Blum**

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### **Raphael Yuster**

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### **Robert Tarjan**

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