

## NIKOLA MILOSAVLJEVIĆ

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### Research Interests

Wireless ad-hoc and sensor networks; algorithm design, analysis and engineering; computational geometry and topology; convex and combinatorial optimization, graph theory.

### Education

09/2003–09/2009 M.Sc. and Ph.D. in Computer Science, Stanford University, Stanford, CA.  
07/1997–05/2002 B.Sc. in Electrical Engineering, University of Belgrade, Serbia. GPA 10/10.

### Theses

Ph.D. Thesis: Robust Algorithms for Infrastructure Establishment in Sensor Networks

Advisor: Prof. Leonidas Guibas.

Reading committee: Prof. Ashish Goel, Prof. Leonidas Guibas, Prof. Serge Plotkin.

B.Sc. Thesis: Adaptive Space-Time Block Codes.

Advisor: Prof. Dušan Drajić.

### Publications

1. N. Milosavljević. On Complexity of Wireless Gathering Problems on Unit-Disk Graphs. Proceedings of the 10th International Conference on Ad-Hoc Networks and Wireless (ADHOC-NOW), 2011. To appear.
2. N. Milosavljević, D. Morozov, P. Škraba. Zigzag Persistent Homology in Matrix Multiplication Time. Proceedings of the 27th Symposium on Computational Geometry (SoCG), 2011. To appear.
3. L. Guibas, N. Milosavljević, A. Motskin. Connected Dominating Sets on Dynamic Geometric Graphs. Proceedings of the 22nd Canadian Conference on Computational Geometry (CCCG), 2010.
4. J. Gao, L. Guibas, N. Milosavljević, D. Zhou. Distributed Resource Management and Matching in Sensor Networks. Proceedings of the 8th International Conference on Information Processing in Sensor Networks (IPSN), 2009.
5. B. Kusy, H.J. Lee, M. Wicke, N. Milosavljević, L. Guibas. Predictive QoS Routing to Mobile Sinks in Wireless Sensor Networks. Proceedings of the 8th International Conference on Information Processing in Sensor Networks (IPSN), 2009.
6. D. Dumitriu, S. Funke, M. Kutz, N. Milosavljević. On the Locality of Extracting a 2-Manifold in  $\mathbb{R}^3$ . Proceedings of the 11th Scandinavian Workshop on Algorithm Theory (SWAT), 2008. Preliminary version at the 24th European Workshop on Computational Geometry (EWCG), 2008.
7. A. Ene, W. Horne, N. Milosavljević, P. Rao, R. Schreiber, R. E. Tarjan. Fast Exact and Heuristic Methods for Role Minimization Problems. Proceedings of the 13th ACM Symposium on Access Control Models and Technologies (SACMAT), 2008.
8. H. Lin, M. Lu, N. Milosavljević, J. Gao, L. J. Guibas. Composable Information Gradients in Wireless Sensor Networks. Proceedings of the 7th International Conference on Information Processing in Sensor Networks (IPSN), 2008.
9. D. Dumitriu, S. Funke, M. Kutz, N. Milosavljević. How Much Geometry It Takes to Reconstruct a 2-Manifold in  $\mathbb{R}^3$ . ACM Journal of Experimental Algorithmics volume 14, August 2009. Preliminary version at the 9th Workshop on Algorithm Engineering and Experiments (ALENEX), 2008.

10. J. Gao, L. Guibas, J. Hershberger, N. Milosavljević. Sparse Data Aggregation in Sensor Networks. Proceedings of the 6th International Conference on Information Processing in Sensor Networks (IPSN), 2007.
11. A. Nguyen, N. Milosavljević, Q. Fang, J. Gao, L. J. Guibas. Landmark Selection and Greedy Landmark-Descent Routing for Sensor Networks. Proceedings of the 26th IEEE Conference on Computer Communications (INFOCOM), 2007.
12. S. Funke, N. Milosavljević. Guaranteed-delivery Geographic Routing Under Uncertain Node Locations. Proceedings of the 26th IEEE Conference on Computer Communications (INFOCOM), 2007.
13. S. Funke, N. Milosavljević. Network Sketching or: "How Much Geometry Hides in Connectivity? – Part II". Proceedings of the 18th ACM-SIAM Symposium on Discrete Algorithms (SODA), 2007. Presented at INFORMS Annual Meeting 2009.
14. S. Funke, N. Milosavljević. Infrastructure-Establishment from Scratch in Wireless Ad-Hoc Networks. Proceedings of the 1st IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), 2005.

### Awards and Honors

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|-----------|---|
| 08/2008   | Siebel Fellowship, class of 2008.   |
| 03/2003   | Best student in 2002, University of Belgrade  |
| 12/2002   | Award for exceptional undergraduate accomplishment, SoEE alumni association             |
| 12/2002   | Best student in the Division of Electronics, Telecommunications and Automatics, SoEE    |
| 02/2002   | Scholarship, Karađorđević Family Foundation   |
| 01/2002   | Award for excellent academic performance, Serbian Ministry of Education                 |
| 09/2000   | Award for excellent academic performance, Embassy of Norway in Belgrade                 |
| 1998–2002 | Scholarship, Serbian Ministry of Education, Foundation for Young Artists and Scientists |

### Research

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| 10/2009–present  | Postdoctoral researcher, Max-Planck-Institut für Informatik, Saarbrücken, Germany.  |
| 01/2004–09/2009  | Research assistant, Geometric Computing Lab, Stanford University<br>Advisor: Prof. Leonidas Guibas.   |
| 07/2007–09/2007  | Summer internship, Hewlett-Packard Labs, Palo Alto, CA.<br>Mentor: Robert Schreiber.<br>Worked on algorithms for the biclique cover problem for clustering and compressing bipartite graphs, applied to access database management and role discovery.    |
| 11/2005, 09/2006 | Research visits to the Max-Planck-Institut für Informatik, Saarbrücken, Germany.<br>Mentor: Stefan Funke.<br>Worked on algorithms for topology discovery in location-unaware wireless networks.   |
| 01/2003–06/2003  | Semester project, Algorithmics Lab, Swiss Federal Institute of Technology Lausanne.<br>Mentor: Amin Shokrollahi.<br>Studied and implemented algorithms for factoring polynomials over finite fields, and list-decoding algorithms for Reed-Solomon codes. |
| 09/2002–12/2002  | Visiting research assistant, Division of Engineering and Applied Sciences, Harvard University, Cambridge, MA.<br>Mentor: Aleksandar Kavčić.<br>Worked on iterative decoding schemes for LDPC codes.   |
| 09/2001–05/2002  | Course projects, School of Electrical Engineering, University of Belgrade.<br>LCD technology survey, neural network-based handwritten digit recognition system, fuzzy logic-based image enhancement algorithm.  |

## Teaching

- 04/2007–06/2007 Teaching assistant, CS154 Introduction to Automata and Complexity Theory, CS Department, Stanford University.
- 04/2006–07/2006 Teaching assistant, CS368 Geometric Algorithms, CS Department, Stanford University.
- 01/2005–04/2005 Teaching assistant, CS348A Geometric Modelling, CS Department, Stanford University.
- 09/2000–06/2002 Lab assistant, Electronics Lab, School of Electrical Engineering, University of Belgrade.

## Professional Activities

Program committee member for SSS 2010, SSS 2011.

Reviewer for networking conferences/journals: IPSN, Globecom, ACM Transactions on Sensor Networks, ICCCN, Wireless Networks...

Reviewer for CS theory conferences/workshops: ALENEX, SoCG, STOC, ICALP, STACS, ALGO...

## Patent

A. Ene, N. Milosavljević, R. Schreiber, R. Tarjan and M. Shah. Method for Exact Biclique Cover of a Bipartite Graph. U.S. patent pending.

## Other Employment

- 09/2001–12/2001 Intern, Computer Center, Universidad Pontificia Comillas, Madrid, Spain.  
Worked on network administration, computer support and maintenance.

## Language Proficiency

Serbian native, English fluent.

## Programming

C++, Java, Matlab, L<sup>A</sup>T<sub>E</sub>X, HTML.