

Sander Verdonschot

Curriculum Vitae

Contact Information

Full Name Alexander Jozef Hubertus Verdonschot
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Education

**2010 - 2015 PhD Computer Science
 Carleton University**

I was part of the Computational Geometry Lab, under the supervision of Prosenjit Bose, Pat Morin, and Vida Dujmović. My research there has resulted in numerous conference and journal publications, which can be found in my list of publications.

**2008 - 2010 Master Computer Science and Engineering
 Eindhoven University of Technology**

I graduated cum laude with an average grade of 9.37/10. The work on my Master Thesis, titled *Optimizing Regular Edge Labelings*, was supervised by Bettina Speckmann and Kevin Buchin. I also participated in the **Masters Honours Program** of the Department of Computer Science, which provides excellent students with a (paid) research assistantship for one day a week. Less than 10% of the master students were invited to participate in the program.

**2005 - 2008 Bachelor Computer Science
 Eindhoven University of Technology**

I graduated cum laude with an average grade of 8.95/10. This was the highest average grade of my year. I also participated in the **Bachelors Honours Program**, which is an inter-facultary program focusing on research and academic skills.

Work Experience

**2017 - 2018 Post-doctoral Researcher
 Carleton University**

As a post-doctoral researcher in the Computational Geometry Lab, supervised by Prosenjit Bose and Pat Morin, I conducted research related to Computational Geometry and Graph Theory.

**2016 - 2017 Contract Instructor
Carleton University**

As contract instructor, I taught two courses on discrete mathematics and algorithms (COMP 1805: Discrete Structures I and COMP 3804: Design and Analysis of Algorithms I), receiving excellent student evaluations for both.

**2015 - 2016 Post-doctoral Researcher
University of Ottawa**

As a post-doctoral researcher in the Computational Geometry Lab, supervised by Vida Dujmović, I conducted research related to Computational Geometry and Graph Theory.

**2010 - 2015 Research and Teaching Assistant
Carleton University**

As research assistant, I conducted research related to Computational Geometry with other members of the Computational Geometry Lab. I have been a teaching assistant for the following courses: Data Structures (Fall 2010 and 2012, Winter and Fall 2013, Fall 2014), Compiler Construction (Winter and Fall 2011), Evolutionary Computation (Winter 2011), Discrete Structures (Winter 2012 and 2015), Design and Analysis of Algorithms I (Winter 2014), and Design and Analysis of Algorithms II (Winter 2012). My duties as a teaching assistant included building and maintaining an automated marking system for programming assignments, presenting tutorials, marking assignments and demonstrations, holding office hours and proctoring exams.

**2009 - 2010 Research Assistant
Eindhoven University of Technology**

As part of the Masters Honours Program, I conducted research related to Computational Geometry in small groups of students. Mark de Berg, Alexander Wolff and Jack van Wijk each supervised one such project.

**2006 - 2010 Study Guide and Tutor
Huiswerk Begeleidingsinstituut Spijkers in Weert**

My work here consisted of weekly one-on-one tutoring sessions for high-school students, as well as answering questions related to their homework and testing them on it.

**2007 - 2008 Teaching Assistant
Eindhoven University of Technology**

I was teaching assistant for the courses Design-based learning 2.1 (Fall 2007 and 2008) and the Java Project at the faculty of Industrial Design (Spring 2008). For Design-based learning, I supervised two groups of 4 to 6 students working on a large algorithms-related project. For the Java Project, I assisted students with implementing agent-based emergent behaviour in Java.

		Awards
2017	Carleton-Fields Postdoctoral Award Fields Institute for Research in Mathematical Sciences	\$12500
2014	Ontario Graduate Scholarship Government of Ontario and Carleton University	\$15000
2013	CUASA Scholarship Carleton University Academic Staff	\$7000
2013	Ontario Graduate Scholarship Government of Ontario and Carleton University	\$15000
2013	Wylde Blanche McDermid Holbein Memorial Scholarship Dean of Graduate and Postdoctoral Affairs, Carleton University	\$3600
2012	Koningstein Scholarship for Excellence in Science and Engineering Faculty of Graduate and Postdoctoral Affairs, Carleton University	\$6500
2011	CUASA Scholarship Carleton University Academic Staff	\$2110
2010	Departmental Scholarship School of Computer Science, Carleton University	4 x \$3500

Publications

Journal papers

1. **On the average number of edges in Theta graphs.**
P. Morin and S. Verdonschot.
Accepted to Online Journal of Analytic Combinatorics.
2. **Flipping edge-labelled triangulations.**
P. Bose, A. Lubiw, V. Pathak, and S. Verdonschot.
Computational Geometry: Theory and Applications, 68:309–326, 2018.
Special Issue in Memory of Ferran Hurtado.
3. **Continuous Yao graphs.**
D. Bakhshesh, L. Barba, P. Bose, J.-L. De Carufel, M. Damian, R. Fagerberg, M. Farshi, A. van Renssen, P. Taslakian, and S. Verdonschot.
Computational Geometry: Theory and Applications, 67:42–52, 2018.
4. **Competitive local routing with constraints.**
P. Bose, R. Fagerberg, A. van Renssen, and S. Verdonschot.
Journal of Computational Geometry, 8(1):125–152, 2017.
5. **Flips in edge-labelled pseudo-triangulations.**
P. Bose and S. Verdonschot.
Computational Geometry: Theory and Applications, 60:45–54, 2017.
Special issue for CCCG 2015.

6. **Towards tight bounds on theta-graphs: More is not always better.**
P. Bose, J.-L. De Carufel, P. Morin, A. van Renssen, and S. Verdonschot.
Theoretical Computer Science, 616:70–93, 2016.
7. **Optimal local routing on Delaunay triangulations defined by empty equilateral triangles.**
P. Bose, R. Fagerberg, A. van Renssen, and S. Verdonschot.
SIAM Journal on Computing, 44(6):1626–1649, 2015.
8. **New and improved spanning ratios for Yao graphs.**
L. Barba, P. Bose, M. Damian, R. Fagerberg, W. L. Keng, J. O’Rourke, A. van Renssen, P. Taslakian, S. Verdonschot, and G. Xia.
Journal of Computational Geometry, 6(2):19–53, 2015.
Special issue for SoCG 2014.
9. **On the number of regular edge labelings.**
K. Buchin, B. Speckmann, and S. Verdonschot.
Discrete Mathematics & Theoretical Computer Science, 16(3):215–228, 2014.
10. **The θ_5 -graph is a spanner.**
P. Bose, P. Morin, A. van Renssen, and S. Verdonschot.
Computational Geometry: Theory and Applications, 48(2):108–119, 2015.
11. **Theta-3 is connected.**
O. Aichholzer, S. W. Bae, L. Barba, P. Bose, M. Korman, A. van Renssen, P. Taslakian, and S. Verdonschot.
Computational Geometry: Theory and Applications, 47(9):910–917, 2014.
Special issue for CCCG 2013.
12. **Making triangulations 4-connected using flips.**
P. Bose, D. Jansens, A. van Renssen, M. Saumell, and S. Verdonschot.
Computational Geometry: Theory and Applications, 47(2A):187–197, 2014.
Special issue for CCCG 2011.

Conference papers

My name is underlined for conference papers that I presented.

13. **Routing on the visibility graph.**
P. Bose, M. Korman, A. van Renssen, and S. Verdonschot.
In Proceedings of the 28th International Symposium on Algorithms and Computation (ISAAC 2017), pages 18:1–18:12, 2017.
14. **Constrained routing between non-visible vertices.**
P. Bose, M. Korman, A. van Renssen, and S. Verdonschot.
In Proceedings of the 23rd Annual International Computing and Combinatorics Conference (COCOON 2017), pages 62–74, 2017.

- 15. Dynamic graph coloring.**
L. Barba, J. Cardinal, M. Korman, S. Langerman, A. van Renssen, M. Roeloffzen, and S. Verdonschot.
In Proceedings of the 15th Algorithms and Data Structures Symposium (WADS 2017), pages 97–108, 2017.
- 16. Power domination on triangular grids.**
P. Bose, C. Pennarun, and S. Verdonschot.
In Proceedings of the 29th Canadian Conference on Computational Geometry (CCCG 2017), pages 2–6, 2017.
- 17. Gabriel triangulations and angle-monotone graphs: local routing and recognition.**
N. Bonichon, P. Bose, P. Carmi, I. Kostitsyna, A. Lubiw, and S. Verdonschot.
In Proceedings of the 24th International Symposium on Graph drawing (GD 2016), pages 519–531, 2016.
- 18. Realizing farthest-point Voronoi diagrams.**
T. Biedl, C. Grimm, L. Palios, J. Shewchuk, and S. Verdonschot.
In Proceedings of the 28th Canadian Conference on Computational Geometry (CCCG 2016), pages 48–56, 2016.
- 19. Rectangle-of-influence triangulations.**
T. Biedl, A. Lubiw, S. Mehrabi, and S. Verdonschot.
In Proceedings of the 28th Canadian Conference on Computational Geometry (CCCG 2016), pages 237–243, 2016.
- 20. Competitive local routing with constraints.**
P. Bose, R. Fagerberg, A. van Renssen, and S. Verdonschot.
In Proceedings of the 26th International Symposium on Algorithms and Computation (ISAAC 2015), pages 23–34, 2015.
- 21. Flips in edge-labelled pseudo-triangulations.**
P. Bose and S. Verdonschot.
In Proceedings of the 27th Canadian Conference on Computational Geometry (CCCG 2015), pages 63–69, 2015.
- 22. Continuous Yao graphs.**
L. Barba, P. Bose, J.-L. De Carufel, M. Damian, R. Fagerberg, A. van Renssen, P. Taslakian, and S. Verdonschot.
In Proceedings of the 26th Canadian Conference on Computational Geometry (CCCG 2014), pages 100–106, 2014.
- 23. Weight balancing on boundaries and skeletons.**
L. Barba, O. Cheong, J.-L. De Carufel, M. Dobbins, R. Fleischer, A. Kawamura, M. Korman, Y. Okamoto, J. Pach, Y. Tang, T. Tokuyama, S. Verdonschot, and T. Wang.
In Proceedings of the 30th Annual Symposium on Computational Geometry (SoCG 2014), pages 436–443, 2014.

- 24. New and improved spanning ratios for Yao graphs.**
L. Barba, P. Bose, M. Damian, R. Fagerberg, W. L. Keng, J. O'Rourke, A. van Renssen, P. Taslakian, S. Verdonschot, and G. Xia.
In Proceedings of the 30th Annual Symposium on Computational Geometry (SoCG 2014), pages 30–39, 2014.
- 25. On the average number of edges in Theta graphs.**
P. Morin and S. Verdonschot.
In Proceedings of the 11th Meeting on Analytic Algorithmics and Combinatorics (ANALCO14), pages 121–132, 2014.
- 26. On the spanning ratio of Theta-graphs.**
P. Bose, A. van Renssen, and S. Verdonschot.
In Proceedings of the 13th Algorithms and Data Structures Symposium (WADS 2013), pages 182–194, 2013.
- 27. On the stretch factor of the Theta-4 graph.**
L. Barba, P. Bose, J.-L. De Carufel, A. van Renssen, and S. Verdonschot.
In Proceedings of the 13th Algorithms and Data Structures Symposium (WADS 2013), pages 109–120, 2013.
- 28. Theta-3 is connected.**
O. Aichholzer, S. W. Bae, L. Barba, P. Bose, M. Korman, A. van Renssen, P. Taslakian, and S. Verdonschot.
In Proceedings of the 25th Canadian Conference on Computational Geometry (CCCG 2013), pages 205–210, 2013.
- 29. The θ_5 -graph is a spanner.**
P. Bose, P. Morin, A. van Renssen, and S. Verdonschot.
In Proceedings of the 39th International Workshop on Graph-Theoretic Concepts in Computer Science (WG 2013), pages 100–114, 2013.
- 30. Competitive routing on a bounded-degree plane spanner.**
P. Bose, R. Fagerberg, A. van Renssen, and S. Verdonschot.
In Proceedings of the 24th Canadian Conference on Computational Geometry (CCCG 2012), pages 299–304, 2012.
- 31. Optimal bounds on Theta-graphs: more is not always better.**
P. Bose, J.-L. De Carufel, P. Morin, A. van Renssen, and S. Verdonschot.
In Proceedings of the 24th Canadian Conference on Computational Geometry (CCCG 2012), pages 305–310, 2012.
- 32. Evolution strategies for optimizing rectangular cartograms.**
K. Buchin, B. Speckmann, and S. Verdonschot.
In Proceedings of the 7th International Conference on Geographic Information Science (GI-Science 2012), pages 29–42, 2012.

33. **On plane constrained bounded-degree spanners.**
P. Bose, R. Fagerberg, A. van Renssen, and S. Verdonschot.
In Proceedings of the 10th Latin American Symposium on Theoretical Informatics (LATIN 2012), pages 85–96, 2012.
34. **Competitive routing in the half- θ_6 -graph.**
P. Bose, R. Fagerberg, A. van Renssen, and S. Verdonschot.
In Proceedings of the 23rd ACM-SIAM Symposium on Discrete Algorithms (SODA 2012), pages 1319–1328, 2012.
35. **On rectilinear partitions with minimum stabbing number.**
M. de Berg, A. Khosravi, S. Verdonschot, and V. van der Weele.
In Proceedings of the 12th Algorithms and Data Structures Symposium (WADS 2011), pages 302–313, 2011.
36. **Making triangulations 4-connected using flips.**
P. Bose, D. Jansens, A. van Renssen, M. Saumell, and S. Verdonschot.
In Proceedings of the 23rd Canadian Conference on Computational Geometry (CCCG 2011), pages 241–247, 2011.
37. **Optimizing regular edge labelings.**
K. Buchin, B. Speckmann, and S. Verdonschot.
In Proceedings of the 18th International Symposium on Graph drawing (GD 2010), pages 117–128, 2011.

Chapters in Books

38. **A history of flips in combinatorial triangulations.**
P. Bose and S. Verdonschot.
In Proceedings of the XIV Spanish Meeting on Computational Geometry (EGC 2011), pages 29–44. 2012.

Theses

39. **Flips and spanners.**
S. Verdonschot.
PhD thesis, Carleton University, 2015.
40. **Optimizing regular edge labelings.**
S. Verdonschot.
Master's thesis, Eindhoven University of Technology, 2010.

Currently under review

41. **On convex polygons in cartesian products.**
J.-L. De Carufel, A. Dumitrescu, W. Meulemans, T. Ophelders, C. Pennarun, C. D. Tóth, and S. Verdonschot.
Submitted to the 16th Scandinavian Symposium and Workshops on Algorithm Theory (SWAT 2018).

- 42. Reconstructing a convex polygon from its ω -cloud.**
P. Bose, J.-L. De Carufel, E. Khramtcova, and S. Verdonschot.
Submitted to the 16th Scandinavian Symposium and Workshops on Algorithm Theory (SWAT 2018).
- 43. Dynamic graph coloring.**
L. Barba, J. Cardinal, M. Korman, S. Langerman, A. van Renssen, M. Roeloffzen, and S. Verdonschot.
Submitted to Algorithmica.
- 44. Constrained routing between non-visible vertices.**
P. Bose, M. Korman, A. van Renssen, and S. Verdonschot.
Submitted to Algorithmica.
- 45. On plane constrained bounded-degree spanners.**
P. Bose, R. Fagerberg, A. van Renssen, and S. Verdonschot.
Submitted to Algorithmica.

Invited Talks

- 46. Flips in edge-labelled triangulations.**
S. Verdonschot.
University of Waterloo, February 2016.
- 47. Optimizing rectangular cartograms.**
S. Verdonschot.
Tohoku University, January 2016.
- 48. Flips in edge-labelled triangulations.**
S. Verdonschot.
Eindhoven University of Technology, June 2015.
- 49. Flips in edge-labelled triangulations.**
S. Verdonschot.
Université libre de Bruxelles, May 2015.
- 50. Making triangulations 4-connected using flips.**
S. Verdonschot.
Eindhoven University of Technology, December 2011.

Scientific community contributions

Served on the program committee for

29th Canadian Conference on Computational Geometry (CCCG 2017)

Reviewed papers for

Computational Geometry: Theory and Applications (CGTA)
Information Processing Letters (IPL)
International Journal of Computational Geometry and Applications (IJCGA)
Journal of Computational Geometry (JoCG)
Journal of Computer and System Sciences (JCSS)

ACM-SIAM Symposium on Discrete Algorithms (SODA)
Canadian Conference on Computational Geometry (CCCG)
European Symposium on Algorithms (ESA)
IEEE Pacific Visualization Symposium (PacificVis)
International Symposium on Computational Geometry (SOCG)
Latin American Symposium on Theoretical Informatics (LATIN)
Scandinavian Symposium and Workshops on Algorithm Theory (SWAT)
Symposium on Theoretical Aspects of Computer Science (STACS)

Organised the following events

29th Canadian Conference on Computational Geometry (CCCG 2017) (Chair)
Fields Workshop on Discrete and Computational Geometry (July 2017)