

# List of Publications

Michiel Smid

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## Books

1. Giri Narasimhan, Michiel Smid. *Geometric Spanner Networks*. Cambridge University Press, Cambridge, 2007.
2. Anil Maheshwari, Michiel Smid. *Introduction to Theory of Computation*. A textbook freely available at  
<http://cg.scs.carleton.ca/~michiel/TheoryOfComputation>
3. Michiel Smid. *Discrete Structures for Computer Science: Counting, Recursion, and Probability*. A textbook freely available at  
<http://cg.scs.carleton.ca/~michiel/DiscreteStructures>

## Edited works

4. Frank Dehne, Jörg-R. Sack, Michiel Smid. *Proceedings 8th Workshop on Algorithms and Data Structures*, Lecture Notes in Computer Science, Vol. 2748, Springer-Verlag, Berlin, 2003.
5. Ravi Janardan, Michiel Smid, Debasish Dutta. *Geometric and Algorithmic Aspects of Computer-Aided Design and Manufacturing*. DIMACS Series in Discrete Mathematics and Theoretical Computer Science, Volume 67, American Mathematical Society, Providence, 2005.
6. Christian Knauer, Michiel Smid. *International Journal of Computational Geometry & Applications*, volume 26, issue 3/4, 2016, special issue of selected papers from the 25th International Symposium on Algorithms and Computation (ISAAC 2014).
7. Joachim Gudmundsson, Michiel Smid. *Proceedings 29th Canadian Conference on Computational Geometry*, 2017.
8. Joachim Gudmundsson, Michiel Smid. *Computational Geometry: Theory and Applications*, special issue of selected papers from the 29th Canadian Conference on Computational Geometry (CCCG 2017), to appear.

## Chapters in Books

9. Michiel Smid. *Closest-point problems in computational geometry*. In: Handbook of Computational Geometry (Jörg-R. Sack and Jorge Urrutia, editors), Elsevier Science, Amsterdam, 1999, pp. 877–935.
10. Prosenjit Gupta, Ravi Janardan, Michiel Smid. *Computational geometry: generalized intersection searching*. In: Handbook of Data Structures and Applications (Dinesh Mehta and Sartaj Sahni, editors), Chapman & Hall/CRC, Boca Raton, 2005, pp. 64-1 – 64-17.
11. Ravi Janardan, Michiel Smid. *Geometric algorithms for layered manufacturing*. In: Geometric and Algorithmic Aspects of Computer-Aided Design and Manufacturing (Ravi Janardan, Michiel Smid, Debasish Dutta, editors), DIMACS Series in Discrete Mathematics and Theoretical Computer Science, Volume 67, American Mathematical Society, Providence, 2005, pp. 189–220.
12. Michiel Smid. *The well-separated pair decomposition and its applications*. In: Handbook of Approximation Algorithms and Metaheuristics (Teofilo F. Gonzalez, editor), Chapman & Hall/CRC, Boca Raton, 2007, pp. 53-1 – 53-12.
13. Joachim Gudmundsson, Giri Narasimhan, Michiel Smid. *Applications of geometric spanner networks*. In: Encyclopedia of Algorithms (Ming-Yang Kao, editor), Springer-Verlag, Berlin, 2008, pp. 40–43.
14. Joachim Gudmundsson, Giri Narasimhan, Michiel Smid. *Geometric spanners*. In: Encyclopedia of Algorithms (Ming-Yang Kao, editor), Springer-Verlag, Berlin, 2008, pp. 360–364.
15. Joachim Gudmundsson, Giri Narasimhan, Michiel Smid. *Planar geometric spanners*. In: Encyclopedia of Algorithms (Ming-Yang Kao, editor), Springer-Verlag, Berlin, 2008, pp. 653–656.
16. Michiel Smid. *The weak gap property in metric spaces of bounded doubling dimension*. In: Efficient Algorithms, Essays Dedicated to Kurt Mehlhorn on the Occasion of His 60th Birthday (Susanne Albers, Helmut Alt, Stefan Näher, editors), Lecture Notes in Computer Science, Vol. 5760, Springer-Verlag, Berlin, 2009, pp. 275–289.
17. Joachim Gudmundsson, Giri Narasimhan, Michiel Smid. *Applications of geometric spanner networks*. In: Encyclopedia of Algorithms, Second Edition (Ming-Yang Kao, editor), Springer-Verlag, Berlin, 2016, pp. 86–90.
18. Joachim Gudmundsson, Giri Narasimhan, Michiel Smid. *Geometric spanners*. In: Encyclopedia of Algorithms, Second Edition (Ming-Yang Kao, editor), Springer-Verlag, Berlin, 2016, pp. 846–852.

19. Joachim Gudmundsson, Giri Narasimhan, Michiel Smid. *Planar geometric spanners*. In: Encyclopedia of Algorithms, Second Edition (Ming-Yang Kao, editor), Springer-Verlag, Berlin, 2016, pp. 1570–1574.
20. Prosenjit Gupta, Ravi Janardan, Saladi Rahul, Michiel Smid. *Computational geometry: generalized (or colored) intersection searching*. In: Handbook of Data Structures and Applications, Second Edition (Dinesh Mehta and Sartaj Sahni, editors), CRC Press, Boca Raton, 2018, Chapter 67, pp. 1042–1057.
21. Michiel Smid. *The well-separated pair decomposition and its applications*. In: Handbook of Approximation Algorithms and Metaheuristics, Second Edition (Teofilo F. Gonzalez, editor), to appear.

## Journal Articles

22. Michiel Smid. *Duadic codes*. IEEE Transactions on Information Theory **33** (1987), pp. 432–433.
23. Michiel Smid, Leen Torenvliet, Peter van Emde Boas, Mark Overmars. *Two models for the reconstruction problem for dynamic data structures*. Journal of Information Processing and Cybernetics EIK **25** (1989), pp. 131–155.
24. Michiel Smid, Mark Overmars, Leen Torenvliet, Peter van Emde Boas. *Maintaining multiple representations of dynamic data structures*. Information and Computation **83** (1989), pp. 206–233.
25. Michiel Smid. *A data structure for the union-find problem having good single-operation complexity*. Algorithms Review **1** (1990), pp. 1–11.
26. Mark Overmars, Michiel Smid, Mark de Berg, Marc van Kreveld. *Maintaining range trees in secondary memory, part I: partitions*. Acta Informatica **27** (1990), pp. 423–452.
27. Michiel Smid, Mark Overmars. *Maintaining range trees in secondary memory, part II: lower bounds*. Acta Informatica **27** (1990), pp. 453–480.
28. Yu-Tai Ching, Kurt Mehlhorn, Michiel Smid. *Dynamic deferred data structuring*. Information Processing Letters **35** (1990), pp. 37–40.
29. Michiel Smid. *Maintaining the minimal distance of a point set in less than linear time*. Algorithms Review **2** (1991), pp. 33–44.
30. Michiel Smid. *Range trees with slack parameter*. Algorithms Review **2** (1991), pp. 77–87.
31. Michiel Smid. *The reconstruction problem for dynamic data structures, an overview*. CWI-Quarterly **4** (1991), pp. 149–172.

32. Michiel Smid. *Maintaining the minimal distance of a point set in polylogarithmic time*. Discrete & Computational Geometry **7** (1992), pp. 415–431.
33. Hans-Peter Lenhof, Michiel Smid. *An optimal construction method for generalized convex layers*. International Journal of Computational Geometry & Applications **3** (1993), pp. 245–267.
34. Hans-Peter Lenhof, Michiel Smid. *Using persistent data structures for adding range restrictions to searching problems*. RAIRO Theoretical Informatics and Applications **28** (1994), pp. 25–49.
35. Christian Schwarz, Michiel Smid, Jack Snoeyink. *An optimal algorithm for the on-line closest-pair problem*. Algorithmica **12** (1994), pp. 18–29.
36. Hans-Peter Lenhof, Michiel Smid. *Maintaining the visibility map of spheres while moving the viewpoint on a circle at infinity*. Algorithmica **13** (1995), pp. 301–312.
37. Michiel Smid. *Dynamic rectangular point location, with an application to the closest pair problem*. Information and Computation **116** (1995), pp. 1–9.
38. Mordecai Golin, Rajeev Raman, Christian Schwarz, Michiel Smid. *Simple randomized algorithms for closest pair problems*. Nordic Journal of Computing **2** (1995), pp. 3–27.
39. Hans-Peter Lenhof, Michiel Smid. *Sequential and parallel algorithms for the  $k$  closest pairs problem*. International Journal of Computational Geometry & Applications **5** (1995), pp. 273–288.
40. Prosenjit Gupta, Ravi Janardan, Michiel Smid. *Further results on generalized intersection searching problems: counting, reporting, and dynamization*. Journal of Algorithms **19** (1995), pp. 282–317.
41. Amitava Datta, Hans-Peter Lenhof, Christian Schwarz, Michiel Smid. *Static and dynamic algorithms for  $k$ -point clustering problems*. Journal of Algorithms **19** (1995), pp. 474–503.
42. Prosenjit Gupta, Ravi Janardan, Michiel Smid. *Algorithms for generalized halfspace range searching and other intersection searching problems*. Computational Geometry: Theory and Applications **5** (1996), pp. 321–340. Also published (erroneously) in **6** (1996), pp. 1–19.
43. Sanjiv Kapoor, Michiel Smid. *New techniques for exact and approximate dynamic closest-point problems*. SIAM Journal on Computing **25** (1996), pp. 775–796.
44. Prosenjit Gupta, Ravi Janardan, Michiel Smid. *Fast algorithms for collision and proximity problems involving moving geometric objects*. Computational Geometry: Theory and Applications **6** (1996), pp. 371–391.

45. Sunil Arya, Michiel Smid. *Efficient construction of a bounded-degree spanner with low weight*. Algorithmica **17** (1997), pp. 33–54.
46. Phillip Bradford, Rudolf Fleischer, Michiel Smid. *More efficient parallel totally monotone matrix searching*. Journal of Algorithms **23** (1997), pp. 386–400.
47. Gautam Das, Sanjiv Kapoor, Michiel Smid. *On the complexity of approximating Euclidean traveling salesman tours and minimum spanning trees*. Algorithmica **19** (1997), pp. 447–460.
48. Prosenjit Gupta, Ravi Janardan, Michiel Smid, Bhaskar Dasgupta. *The rectangle enclosure and point-dominance problems revisited*. International Journal of Computational Geometry & Applications **7** (1997), pp. 437–455.
49. Frank Follert, Elmar Schömer, Jürgen Sellen, Michiel Smid, Christian Thiel. *Computing a largest empty anchored cylinder, and related problems*. International Journal of Computational Geometry & Applications **7** (1997), pp. 563–580.
50. Prosenjit Gupta, Ravi Janardan, Michiel Smid. *A technique for adding range restrictions to generalized searching problems*. Information Processing Letters **64** (1997), pp. 263–269.
51. Mordecai Golin, Rajeev Raman, Christian Schwarz, Michiel Smid. *Randomized data structures for the dynamic closest-pair problem*. SIAM Journal on Computing **27** (1998), pp. 1036–1072.
52. Michiel Smid, Ravi Janardan. *On the width and roundness of a set of points in the plane*. International Journal of Computational Geometry & Applications **9** (1999), pp. 97–108.
53. Prosenjit Gupta, Ravi Janardan, Michiel Smid. *Efficient algorithms for counting and reporting pairwise intersections between convex polygons*. Information Processing Letters **69** (1999), pp. 7–13.
54. Jayanth Majhi, Ravi Janardan, Michiel Smid, Prosenjit Gupta. *On some geometric optimization problems in layered manufacturing*. Computational Geometry: Theory and Applications **12** (1999), pp. 219–239.
55. Jayanth Majhi, Ravi Janardan, Jörg Schwerdt, Michiel Smid, Prosenjit Gupta. *Minimizing support structures and trapped area in two-dimensional layered manufacturing*. Computational Geometry: Theory and Applications **12** (1999), pp. 241–267.
56. Prosenjit Gupta, Ravi Janardan, Michiel Smid. *Algorithms for some intersection searching problems involving circular objects*. International Journal of Mathematical Algorithms **1** (1999), pp. 35–52.

57. Sunil Arya, David M. Mount, Michiel Smid. *Dynamic algorithms for geometric spanners of small diameter: Randomized solutions*. Computational Geometry: Theory and Applications **13** (1999), pp. 91–107.
58. Jörg Schwerdt, Michiel Smid, Jayanth Majhi, Ravi Janardan. *Computing the width of a three-dimensional point set: an experimental study*. ACM Journal of Experimental Algorithms **4** (1999), Article 8.
59. Jörg Schwerdt, Michiel Smid, Ravi Janardan, Eric Johnson, Jayanth Majhi. *Protecting critical facets in layered manufacturing*. Computational Geometry: Theory and Applications **16** (2000), pp. 187–210.
60. Giri Narasimhan, Michiel Smid. *Approximating the stretch factor of Euclidean graphs*. SIAM Journal on Computing **30** (2000), pp. 978–989.
61. Gautam Das, Michiel Smid. *A lower bound for approximating the geometric minimum weight matching*. Information Processing Letters **74** (2000), pp. 253–255.
62. Danny Z. Chen, Gautam Das, Michiel Smid. *Lower bounds for computing geometric spanners and approximate shortest paths*. Discrete Applied Mathematics **110** (2001), pp. 151–167.
63. Jayanth Majhi, Ravi Janardan, Michiel Smid, Jörg Schwerdt. *Multi-criteria geometric optimization problems in layered manufacturing*. International Journal of Mathematical Algorithms **2** (2001), pp. 201–225.
64. Christos Levcopoulos, Giri Narasimhan, Michiel Smid. *Improved algorithms for constructing fault-tolerant spanners*. Algorithmica **32** (2002), pp. 144–156.
65. Michiel Smid, Vanam Srilakshmi. *Computing the smallest T-shaped polygon containing k points*. International Journal of Computer Mathematics **79** (2002), pp. 143–156.
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67. Jörg Schwerdt, Michiel Smid, Man Chung Hon, Ravi Janardan. *Computing an optimal hatching direction in layered manufacturing*. International Journal of Computer Mathematics **79** (2002), pp. 1067–1081.
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69. Ulrich Wendt, Katharina Stiebe-Lange, Michiel Smid. *On the influence of imaging conditions and algorithms on the quantification of surface topography*. Journal of Microscopy **207** (2002), pp. 169–179.

70. Ulrich Wendt, Katharina Lange, Michiel Smid, Rahul Ray, Klaus Tönnies. *Surface topography quantification by integral and feature-related parameters*. Materialwissenschaft und Werkstofftechnik (Materials Science and Engineering Technology) **33** (2002) pp. 621–627.
71. Man Chung Hon, Ravi Janardan, Jörg Schwerdt, Michiel Smid. *Minimizing the total projection of a set of vectors, with applications to layered manufacturing*. Computer-Aided Design **35** (2003), pp. 57–68.
72. Jörg Schwerdt, Michiel Smid, Ravi Janardan, Eric Johnson. *Protecting critical facets in layered manufacturing: implementation and experimental results*. Computer-Aided Design **35** (2003), pp. 647–657.
73. Michiel Smid, Rahul Ray, Ulrich Wendt, Katharina Lange. *Computing large planar regions in terrains, with an application to fracture surfaces*. Discrete Applied Mathematics **139** (2004), pp. 253–264.
74. Prosenjit Bose, Michiel Smid, David R. Wood. *Light edges in degree-constrained graphs*. Discrete Mathematics **282** (2004), pp. 35–41.
75. Prosenjit Bose, Anil Maheshwari, Giri Narasimhan, Michiel Smid, Norbert Zeh. *Approximating geometric bottleneck shortest paths*. Computational Geometry: Theory and Applications **29** (2004), pp. 233–249.
76. Danny Z. Chen, Michiel Smid, Bin Xu. *Geometric algorithms for density-based data clustering*. International Journal of Computational Geometry & Applications **15** (2005), pp. 239–260.
77. Prosenjit Bose, Joachim Gudmundsson, Michiel Smid. *Constructing plane spanners of bounded degree and low weight*. Algorithmica **42** (2005), pp. 249–264.
78. Danny Krizanc, Pat Morin, Michiel Smid. *Range mode and range median queries on lists and trees*. Nordic Journal of Computing **12** (2005), pp. 1–17.
79. Anil Maheshwari, Michiel Smid. *A dynamic dictionary for priced information with application*. Algorithmica **44** (2006), pp. 151–165.
80. Ivaylo Ilinkin, Ravi Janardan, Michiel Smid, Eric Johnson, Paul Castillo, Jörg Schwerdt. *Heuristics for estimating contact area of supports in layered manufacturing*. ACM Journal of Experimental Algorithms **11** (2006), Article 1.6.
81. Joachim Gudmundsson, Giri Narasimhan, Michiel Smid. *Distance-preserving approximations of polygonal paths*. Computational Geometry: Theory and Applications **36** (2007), pp. 183–196.

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83. Joachim Gudmundsson, Christos Levcopoulos, Giri Narasimhan, Michiel Smid. *Approximate distance oracles for geometric spanners*. ACM Transactions on Algorithms, **4** (2008), Article 10.
84. Boris Aronov, Mark de Berg, Otfried Cheong, Joachim Gudmundsson, Herman Haverkort, Michiel Smid, Antoine Vigneron. *Sparse geometric graphs with small dilation*. Computational Geometry: Theory and Applications **40** (2008), pp. 207–219.
85. Anil Maheshwari, Michiel Smid, Norbert Zeh. *I/O-efficient algorithms for computing planar geometric spanners*. Computational Geometry: Theory and Applications **40** (2008), pp. 252–271.
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87. Prosenjit Bose, Paz Carmi, Mathieu Couture, Anil Maheshwari, Michiel Smid, Norbert Zeh. *Geometric spanners with small chromatic number*. Computational Geometry: Theory and Applications **42** (2009), pp. 134–146.
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89. Tetsuo Asano, Prosenjit Bose, Paz Carmi, Anil Maheshwari, Chang Shu, Michiel Smid, Stefanie Wuhrer. *A linear-space algorithm for distance preserving graph embedding*. Computational Geometry: Theory and Applications **42** (2009), pp. 289–304.
90. Joachim Gudmundsson, Michiel Smid. *On spanners of geometric graphs*. International Journal of Foundations of Computer Science **20** (2009), pp. 135–149.
91. Prosenjit Bose, Pat Morin, Michiel Smid, Stefanie Wuhrer. *Rotationally monotone polygons*. Computational Geometry: Theory and Applications **42** (2009), pp. 471–483.
92. Rossen Atanassov, Prosenjit Bose, Mathieu Couture, Anil Maheshwari, Pat Morin, Michel Paquette, Michiel Smid, Stefanie Wuhrer. *Algorithms for optimal outlier removal*. Journal of Discrete Algorithms **7** (2009), pp. 239–248.
93. Prosenjit Bose, Michiel Smid, Daming Xu. *Delaunay and diamond triangulations contain spanners of bounded degree*. International Journal of Computational Geometry & Applications **19** (2009), pp. 119–140.

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95. Rolf Klein, Christian Knauer, Giri Narasimhan, Michiel Smid. *On the dilation spectrum of paths, cycles, and trees.* Computational Geometry: Theory and Applications **42** (2009), pp. 923–933.
96. Prosenjit Bose, Pat Morin, Michiel Smid, Stefanie Wuhrer. *Clamshell casting.* Algorithmica **55** (2009), pp. 666–702.
97. Prosenjit Gupta, Ravi Janardan, Michiel Smid. *Efficient non-intersection queries on aggregated geometric data.* International Journal of Computational Geometry & Applications **19** (2009), pp. 479–506.
98. Prosenjit Bose, Sébastien Collette, Stefan Langerman, Anil Maheshwari, Pat Morin, Michiel Smid. *Sigma-local graphs.* Journal of Discrete Algorithms **8** (2010), pp. 15–23.
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105. Anil Maheshwari, Michiel Smid, Norbert Zeh. *Low-interference networks in metric spaces of bounded doubling dimension.* Information Processing Letters **111** (2011), pp. 1120–1123.
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107. Prosenjit Bose, Mirela Damian, Karim Douïeb, Joseph O'Rourke, Ben Seamone, Michiel Smid, Stefanie Wuhrer.  *$\pi/2$ -Angle Yao graphs are spanners*. International Journal of Computational Geometry & Applications **22** (2012), pp. 61–82.
108. Paz Carmi, Michiel Smid. *An optimal algorithm for computing angle-constrained spanners*. Journal of Computational Geometry **3** (2012), pp. 196–221.
109. Minati De, Anil Maheshwari, Subhas C. Nandy, Michiel Smid. *An in-place min-max priority search tree*. Computational Geometry: Theory and Applications **46** (2013), pp. 310–327.
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111. Prosenjit Bose, Michiel Smid. *On plane geometric spanners: A survey and open problems*. Computational Geometry: Theory and Applications **46** (2013), pp. 818–830.
112. Prosenjit Bose, Vida Dujmović, Pat Morin, Michiel Smid. *Robust geometric spanners*. SIAM Journal on Computing **42** (2013), pp. 1720–1736.
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116. Jean-Lou De Carufel, Carsten Grimm, Anil Maheshwari, Megan Owen, Michiel Smid. *A note on the unsolvability of the weighted region shortest path problem*. Computational Geometry: Theory and Applications **47** (2014), pp. 724–727.
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