Bibliography

Abellanas, M., García, J., Hernández, G., Hurtado, F. & Serra, O. (1992), Onion polygonizations in *Proc. 4th Canad. Conf. Comput. Geom.*, pp. 127–31.

Aggarwal, A., Guibas, L. J., Saxe, J. & Shor, P. W. (1989), A linear-time algorithm for computing the Voronoi diagram of a convex polygon, *Discrete Comput. Geom.* **4**(6), 591–604.

Aho, A. V., Hopcroft, J. E. & Ullman, J. D. (1983), *Data Structures and Algorithms*, Addison-Wesley, Reading, MA.

Aichholzer, O., Alberts, D., Aurenhammer, F. & Gärtner, B. (1995), A novel type of skeleton for polygons, *J. Universal Comput. Sci.* **1**(12), 752–61.

Akl, S. G. & Lyons, K. A. (1993), *Parallel Computational Geometry*, Prentice Hall, Englewood Cliffs, NJ.

Akl, S. G. & Toussaint, G. T. (1978), A fast convex hull algorithm, *Inform. Process. Lett.* **7**(5), 219–22.

Albertson, M. O. & Hutchinson, J. P. (1988), *Discrete Mathematics with Algorithms*, Wiley, New York.

Alt, H., Guibas, L. J., Mehlhorn, K., Karp, R. & Widgerson, A. (1998), A method of obtaining randomized algorithms with small tail probabilities, *Algorithmica*. To appear.

Amenta, N. (1997), Computational geometry software, in J. E. Goodman & J. O'Rourke, eds., *Handbook of Discrete and Computational Geometry*, CRC Press LLC, Boca Raton, Chapter 52, pp. 951–60.

Anderson, K. R. (1978), A reevaluation of an efficient algorithm for determining the convex hull of a finite planar set, *Inform. Process. Lett.* **7**, 53–5.

Aronov, B. & Sharir, M. (1997), On translational motion planning of a convex polyhedron in 3-space, *SIAM J. Comput.* **26**, 1785–803.

Arora, S. (1996), Polynomial time approximation schemes for Euclidean TSP and other geometric problems, in *Proc. 37th Annu. IEEE Sympos. Found. Comput. Sci.*, pp. 2–11.

Arvo, J. (1991), Random rotation matrics, in J. Arvo, ed., *Graphics Gems II*, Academic Press, Boston, pp. 355–6.

Atallah, M. J. (1985), A matching problem in the plane, *J. Comput. Syst. Sci.* **31**, 63–70.

Aurenhammer, F. (1991), Voronoi diagrams: A survey of a fundamental data structure, *ACM Comput. Surv.* **23**, 345–405.

Avis, D. & Fukuda, K. (1992), A pivoting algorithm for convex hulls and vertex enumeration of arrangements and polyhedra, *Discrete Comput. Geom.* **8**, 295–313.

Avnaim, F., Boissonnat, J.-D., Devillers, O., Preparata, F. & Yvinec, M. (1997), Evaluating signs of determinants using single-precision arithmetic, *Algorithmica* **17**, 111–32.

Balaban, I. J. (1995), An optimal algorithm for finding segment intersections, in *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pp. 211–19.

Banchoff, T. F. (1990), *Beyond the Third Dimension: Geometry, Computer Graphics, and Higher Dimensions*, Scientific American Library, New York.

Bass, L. J. & Schubert, S. R. (1967), On finding the disc of minimum radius containing a given set of points, *Math. Comput.* **12**, 712–14.

Batchelor, B. G. (1980), Hierarchial shape description based upon convex hulls of concavities, *J. Cybernetics* **10**, 205–10.

Baumgart, B. G. (1975), A polyhedron representation for computer vision, in *Proc. AFIPS Natl. Comput. Conf.*, Vol. 44, pp. 589–96.

Bentley, J. L. (1992), Fast algorithms for geometric traveling salseman problems, *ORSA J. Comput.* **4**(4), 387–411.

Bentley, J. L. & Ottmann, T. A. (1979), Algorithms for reporting and counting geometric intersections, *IEEE Trans. Comput.* **C-28**, 643–7.

Berger, M. (1986), *Computer Graphics with Pascal*, Benjamin/Cummings, Menlo Park.

Bern, M., Eppstein, D., Plassman, P. & Yao, F. (1991), Horizon theorems for lines and polygons, in J. Goodman, R. Pollack & W. Steiger, eds., *Discrete and Computational Geometry: Papers from the DIMACS Special Year*, Vol. 6 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, American Mathematical Society, Providence, pp. 45–66.

Blum, H. (1967), A transformation for extracting new descriptors of shape, in W. Wathen-Dunn, ed., *Models for the Perception of Speech and Visual Form*, MIT Press, Cambridge, pp. 362–80.

Bookstein, F. L. (1978), *The Measurement of Biological Shape and Shape Change*, Lecture Notes in Biomathematics 24, Springer-Verlag, Berlin.

Bookstein, F. L. (1991), *Morphometric Tools for Landmark Data*, Cambridge University Press, Cambridge.

Bronnimann, H. & Yvinec, M. (1997), Efficient exact evaluation of signs of determinants, in *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pp. 166–73.

Brooks, R. A. (1983), Solving the Find-Path problem by good representation of free space, *IEEE Trans. Syst. Man Cybern.* **SMC-13**(3), 190–7.

Brost, R. (1991), Analysis and planning of planar manipulation tasks, PhD thesis, Carnegie Mellon Univ., CMU-CS-91-149.

Brown, K. Q. (1979), Voronoi diagrams from convex hulls, *Inform. Proc. Lett.* **9**, 223–8.

Brown, K. Q. (1981), Comments on "Algorithms for reporting and counting geometric intersections", *IEEE Trans. Comput.* **C-30**, 147–8.

Buck, R. C. & Buck, E. F. (1965), *Advanced Calculus*, McGraw-Hill, New York.

Canny, J. (1987), *The Complexity of Robot Motion Planning*, MIT Press, Cambridge, MA.

Carvalho, P. C. P. & Cavalcanti, P. R. (1995), Point in polyhedron testing using spherical polygons, in A. W. Paeth, ed., *Graphics Gems V*, Academic Press, Boston, pp. 42–54.

Chand, D. R. & Kapur, S. S. (1970), An algorithm for convex polytopes, *J. Assoc. Comput. Mach.* **17**, 78–86.

Chartrand, G. & Oellermann, O. R. (1993), *Applied and Algorithmic Graph Theory*, McGraw-Hill, New York.

Chazelle, B. (1980), Computational geometry and convexity, Report CMU-CS-80-150, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA. Ph.D. thesis from Yale Univ.

Chazelle, B. (1991), Triangulating a simple polygon in linear time, *Discrete Comput. Geom.* **6**, 485–524.

Chazelle, B. & Dobkin, D. P. (1985), Optimal convex decompositions, in G. T. Toussaint, ed., *Computational Geometry*, North-Holland, Amsterdam, pp. 63–133.

Chazelle, B. & Dobkin, D. P. (1987), Intersection of convex objects in two and three dimensions, *J. Assoc. Comput. Mach.* **34**, 1–27.

Chazelle, B. & Edelsbrunner, H. (1992), An optimal algorithm for intersecting line segments in the plane, *J. Assoc. Comput. Mach.* **39**, 1–54.

Chazelle, B. & Guibas, L. J. (1986a), Fractional cascading: I. A data structuring technique, *Algorithmica* **1**, 133–62.

Chazelle, B. & Guibas, L. J. (1986b), Fractional cascading: II. Applications, *Algorithmica* **1**, 163–91.

Chazelle, B. & Incerpi, J. (1984), Triangulation and shape complexity, *ACM Trans. on Graphics* **3**, 135–52.

Chazelle, B., Goodman, J. E. & Pollack, R., eds. (1998), *Advances in Discrete and Computational Geometry*, American Mathematical Society, Providence. To appear.

Chazelle, B., Guibas, L. J. & Lee, D. T. (1985), The power of geometric duality, *BIT* **25**, 76–90.

Chazelle, B., Ottmann, T. A., Soisalon-Soininen, E. & Wood, D. (1984), The complexity and decidability of SEPARATION, in *Proc. 11th Int. Colloq. Automat. Lang. Program.*, Vol. 172 of *Lecture Notes in Comput. Sci.*, Springer-Verlag, Berlin, pp. 119–27.

Chew, L. P. (1985), Planning the shortest path for a disc in $O(n^2 \log n)$ time, in *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pp. 214–20.

Chinn, W. G. & Steenrod, N. E. (1966), *First Concepts of Topology: The Geometry of Mappings of Segments, Curves, Circles, and Disks*, Mathematical Association of America, Washington, DC.

Chvátal, V. (1975), A combinatorial theorem in plane geometry, *J. Combin. Theory Ser. B* **18**, 39–41.

Chvátal, V. (1983), *Linear Programming*, W. H. Freeman, New York.

Clarkson, K. L. (1992), Safe and effective determinant evaluation, in *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pp. 387–95.

Clarkson, K. L. & Shor, P. W. (1989), Applications of random sampling in computational geometry, II, *Discrete Comput. Geom.* **4**, 387–421.

Clarkson, K., Tarjan, R. E. & Van Wyk, C. J. (1989), A fast Las Vegas algorithm for triangulating a simple polygon, *Discrete Comput. Geom.* **4**, 423–32.

Cohen, J. & Hickey, T. (1979), Two algorithms for determining volumes of convex polyhedra, *J. Assoc. Comput. Mach.* **26**, 401–14.

Cormen, T. H., Leiserson, C. E. & Rivest, R. L. (1990), *Introduction to Algorithms*, MIT Press, Cambridge.

Coxeter, H. S. M. (1961), *Introduction to Geometry*, Wiley, New York.

Coxeter, H. S. M. (1973), *Regular Polytopes*, 2nd ed., Dover, New York.

Coxeter, H. S. M. & Greitzer, S. L. (1967), *Geometry Revisited*, Mathematical Association of America, Washington, DC.

Cromwell, P. R. (1997), *Polyhedra*, Cambridge University Press, Cambridge.

Day, A. M. (1990), Implementation of an algorithm to find the convex hull of a set of 3-d points, *ACM Trans. Graph.* **9**(1), 105–32.

de Berg, M., van Kreveld, M., Overmars, M. & Schwarzkopf, O. (1997), *Computational Geometry: Algorithms and Applications*, Springer-Verlag, Berlin.

Dettmers, R., Doraiswamy, I., Gorini, C. & Toy, C. (1992), Where can a robot reach?, Module developed by the Consortium for Mathematics and Its Applications.

Devijver, P. A. & Kittler, J. (1982), *Pattern Recognition: A Statistical Approach*, Prentice Hall, Englewood Cliffs, NJ.

Devillers, O. (1992), Randomization yields simple $O(n \log^* n)$ algorithms for difficult $\Omega(n)$ problems, *Int. J. Comput. Geom. Appl.* **2**(1), 97–111.

Diaz, M. (1990), Algorithms for balanced partitioning of polygons and point sets, PhD thesis, Johns Hopkins Univ.

Dijkstra, E. W. (1959), A note on two problems in connexion with graphs, *Numerische Mathematik* **1**, 269–71.

Dobkin, D. P. & Kirkpatrick, D. G. (1983), Fast detection of polyhedral intersection, *Theoret. Comput. Sci.* **27**, 241–53.

Dobkin, D. P. & Kirkpatrick, D. G. (1990), Determining the separation of preprocessed polyhedra–a unified approach, in *Proc. 17th Int. Colloq. Automata Lang. Program.*, Vol. 443 of *Lecture Notes in Comput. Sci.*, Springer-Verlag, Berlin, pp. 400–13.

Dobkin, D. P. & Lipton, R. J. (1976), Multidimensional searching problems, *SIAM J. Comput.* **5**, 181–6.

Dobkin, D. P., Edelsbrunner, H. & Overmars, M. H. (1990), Searching for empty convex polygons, *Algorithmica* **5**, 561–71.

Dorward, S. E. (1994), A survey of object-space hidden surface removal, *Int. J. Comput. Geom. Appl.* **4**(3), 325–62.

Du, D.-Z. & Hwang, F. K., eds. (1992), *Computing in Euclidean Geometry*, Vol. 1 of *Lecture Notes Series on Computing*, World Scientific, Singapore.

Edelsbrunner, H. (1985), Computing the extreme distances between two convex polygons, *J. Algorithms* **6**, 213–24.

Edelsbrunner, H. (1987), *Algorithms in Combinatorial Geometry*, Springer-Verlag, Heidelberg.

Edelsbrunner, H. & Guibas, L. J. (1989), Topologically sweeping an arrangement, *J. Comput. Syst. Sci.* **38**, 165–94. Corrigendum in 42(1991), 249–51.

Edelsbrunner, H. & Maurer, H. A. (1985), Finding extreme points in three dimensions and solving the post-office problem in the plane, *Inform. Process. Lett.* **21**, 39–47.

Edelsbrunner, H. & Mücke, E. P. (1990), Simulation of simplicity: A technique to cope with degenerate cases in geometric algorithms, *ACM Trans. Graph.* **9**, 66–104.

Edelsbrunner, H. & Seidel, R. (1986), Voronoi diagrams and arrangements, *Discrete Comput. Geom.* **1**, 25–44.

Edelsbrunner, H., O'Rourke, J. & Seidel, R. (1986), Constructing arrangements of lines and hyperplanes with applications, *SIAM J. Comput.* **15**, 341–63.

Edelsbrunner, H., Seidel, R. & Sharir, M. (1993), On the zone theorem for hyperplane arrangements, *SIAM J. Comput.* **22**(2), 418–29.

Erickson, J. (1997), Plücker coordinates, *Ray Tracing News* **10**(3) (electronic journal).

Euclid (1956), *The Elements*, Dover, New York. Thomas Heath translation.

FAQ (1997), Comp.graphics.algorithms FAQ. Usenet newsgroup.

Farin, G. (1993), *Curves and Surfaces for Computer Aided Geometric Design: A Practical Guide*, Academic Press, Boston.

Faugeras, O. (1993), *Three-Dimensional Computer Vision: A Geometric Viewpoint*, MIT Press, Cambridge.

Feng, H. Y. F. & Pavlidis, T. (1975), Decomposition of polygons into simpler components: Feature generation for syntactic pattern recognition, *IEEE Trans. Comput.* **C-24**, 636–50.

Field, D. A. (1986), Implementing Watson's algorithm in three dimensions, in *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pp. 246–59.

Fisk, S. (1978), A short proof of Chvátal's watchman theorem, *J. Combin. Theory Ser. B* **24**, 374.

Foley, J. D., van Dam, A., Feiner, S. K. & Hughes, J. F. (1990), *Computer Graphics: Principles and Practice*, Addison-Wesley, Reading, MA.

Foley, J. D., van Dam, A., Feiner, S. K., Hughes, J. F. & Phillips (1993), *Introduction to Computer Graphics*, Addison-Wesley, Reading, MA.

Fortune, S. (1987), A sweepline algorithm for Voronoi diagrams, *Algorithmica* **2**, 153–74.

Fortune, S. (1992), Voronoi diagrams and Delaunay triangulations, in D.-Z. Du & F. Hwang, eds., *Computing in Euclidean Geometry*, Vol. 1 of *Lecture Notes Series on Computing*, World Scientific, Singapore, pp. 193–234.

Fortune, S. (1997), Voronoi diagrams and Delaunay triangulations, in J. E. Goodman & J. O'Rourke, eds., *Handbook of Discrete and Computational Geometry*, CRC Press LLC, Boca Raton, Chapter 20, pp. 377–88.

Fournier, A. & Montuno, D. Y. (1984), Triangulating simple polygons and equivalent problems, *ACM Trans. on Graphics* **3**, 153–74.

Fu, J.-J. & Lee, R. C. T. (1991), Voronoi diagrams of moving points in the plane, *Int. J. Comput. Geom. Appl.* **1**(1), 23–32.

Garey, M. & Johnson, D. (1979), *Computers and Intractability: A Guide to the Theory of NP-Completeness*, W. H. Freeman, New York.

Garey, M. R., Johnson, D. S., Preparata, F. P. & Tarjan, R. E. (1978), Triangulating a simple polygon, *Inform. Process. Lett.* **7**, 175–9.

Ghosh, S. K. & Mount, D. M. (1991), An output-sensitive algorithm for computing visibility graphs, *SIAM J. Comput.* **20**, 888–910.

Giblin, P. J. (1977), *Graphs, Surfaces and Homology: An Introduction to Algebraic Topology*, Chapman and Hall, London.

Gigus, Z., Canny, J. & Seidel, R. (1991), Efficiently computing and representing aspect graphs of polyhedral objects, *IEEE Trans. Pattern Anal. Mach. Intell.* **13**(6), 542–51.

Glassner (I), A. S., Arvo (II), J., Kirk (III), D., Heckbert (IV), P. S. & Paeth (V), A. W., eds. (1990–1995), *Graphics Gems I–V*, Academic Press, Boston.

Goldberg, K., Halperin, D., Latombe, J.-C. & Wilson, R., eds. (1995), *Algorithmic Foundations of Robotics*, A. K. Peters, Wellesley.

Goodman, J. E. & O'Rourke, J., eds. (1997), *Handbook of Discrete and Computational Geometry*, CRC Press LLC, Boca Raton, FL.

Goodman, J. E., Pollack, R. & Steiger, W., eds. (1991), *Discrete and Computational Geometry: Papers from the DIMACS Special Year*, DIMACS, American Mathematical Society and Association for Computing Machinery, Providence, RI.

Graham, R. L. (1972), An efficient algorithm for determining the convex hull of a finite planar set, *Inform. Process. Lett.* **1**, 132–3.

Green, P. & Sibson, R. (1977), Computing Dirichlet tesselations in the plane, *Comput. J.* **21**, 168–73.

Greene, D. H. (1983), The decomposition of polygons into convex parts, in F. P. Preparata, ed., *Advances in Computing Research*, JAI Press, Greenwich, CT, pp. 235–59.

Gries, D. & Stojmenović, I. (1987), A note on Graham's convex hull algorithm, *Inform. Process. Lett.* **25**, 323–7.

Guggenheimer, H. W. (1977), *Applicable Geometry: Global and Local Convexity*, R. E. Krieger, Huntington, NY.

Guibas, L. J. & Stolfi, J. (1985), Primitives for the manipulation of general subdivisions and the computation of Voronoi diagrams, *ACM Trans. Graph.* **4**, 74–123.

Guibas, L. J. & Stolfi, J. (1988), Ruler, compass and computer: The design and analysis of geometric algorithms, in R. A. Earnshaw, ed., *Theoretical Foundations of Computer Graphics and CAD*, Vol. F40 of *NATO ASI*, Springer-Verlag, Berlin, pp. 111–65.

Guibas, L. J. & Yao, F. F. (1983), On translating a set of rectangles, in F. P. Preparata, ed., *Computational Geometry*, Vol. 1 of *Advances in Computing Research*, JAI Press, Greenwich, CT, pp. 61–77.

Guibas, L. J., Hershberger, J., Leven, D., Sharir, M. & Tarjan, R. E. (1987), Linear-time algorithms for visibility and shortest path problems inside triangulated simple polygons, *Algorithmica* **2**, 209–33.

Guibas, L. J., Mitchell, J. S. B. & Roos, T. (1991), Voronoi diagrams of moving points in the plane, in G. Schmidt & R. Berghammer, eds., *Proc. 17th Int. Workshop Graph-Theoret. Concepts Comput. Sci.*, Vol. 570 of *Lecture Notes in Comput. Sci.*, Springer-Verlag, Berlin, pp. 113–25.

Guibas, L. J., Ramshaw, L. & Stolfi, J. (1983), A kinetic framework for computational geometry, in *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pp. 100–11.

Haines, E. (1994), Point in polygon strategies, in P. S. Heckbert, ed., *Graphics Gems IV*, Academic Press, Boston, pp. 24–46.

Haines, E. (1997), Detecting points on the edge of a polygon, *Ray Tracing News* **10**(2) (electronic journal).

Halmos, P. R. (1985), *I Want to Be a Mathematician*, Springer-Verlag, New York.

Halperin, D. (1997), Arrangements, in J. E. Goodman & J. O'Rourke, eds., *Handbook of Discrete and Computational Geometry*, CRC Press LLC, Boca Raton, Chapter 21, pp. 389–412.

Heath, T. L. (1956), *Euclid: The Elements*, Dover, New York.

Henle, M. (1979), *A Combinatorial Introduction to Topology*, W. H. Freeman, San Francisco.

Hertel, S. & Mehlhorn, K. (1983), Fast triangulation of simple polygons, *Proc. 4th Internat. Conf. Found. Comput. Theory*, Vol. 158 of *Lecture Notes in Comput. Sci.*, Springer-Verlag, Berlin, pp. 207–18.

Hill, F. S. Jr. (1990), *Computer Graphics*, Macmillan, New York.

Hoffmann, C. (1989), *Geometric and Solid Modeling*, Morgan Kaufmann, San Mateo, CA.

Hofstadter, D. R. (1979), *Gödel, Escher, Bach: An Eternal Golden Braid*, Basic Books, New York.

Honsberger, R. (1976), *Mathematical Gems II*, Mathematical Association of America, pp. 104–10, Washington, DC.

Hopcroft, J., Joseph, D. & Whitesides, S. (1985), On the movement of robot arms in 2-dimensional bounded regions, *SIAM J. Computing* **14**(2), 315–33. Also in *Planning, Geometry, and Complexity of Robot Motion*, ed. J. T. Schwartz, M. Sharir, J. Hopcroft, Ablex, 1987, 304–29.

Hopcroft, J. E., Schwartz, J. T. & Sharir, M. (1987), *Planning, Geometry, and Complexity of Robot Motion*, ed. Ablex Publishing, Norwood, NJ.

Horton, J. D. (1983), Sets with no empty convex 7-gons, *Canad. Math. Bull.* **26**, 482–4.

Icking, C., Rote, G., Welzl, E. & Yap, C. (1993), Shortest paths for line segments, *Algorithmica* **10**, 182–200.

Jaromczyk, J. & Kowaluk, M. (1991), Constructing the relative neighborhood graph in 3-dimensional space, *Discrete. Appl. Math.* **31**, 181–92.

Jaromczyk, J. Q. & Toussaint, G. T. (1992), Relative neighborhood graphs and their relatives, *Proc. IEEE* **80**(9), 1502–17.

Jarvis, R. A. (1983), Growing polyhedral obstacles for planning collision-free paths, *Australian Comput. J.* **15**(3), 103–11.

Jones, S. & O'Rourke, J. (1990), A note on moving a chair through a doorway, *Algorithms Review* **1**(3), 139–49. (S. Jones is now S. Dorward).

Kallay, M. (1984), The complexity of incremental convex hull algorithms in R^d, *Inform. Process. Lett.* **19**, 197.

Kanatani, K. (1993), *Geometric Computation for Machine Vision*, Clarendon Press, Oxford.

Kantabutra, V. (1992), Motions of a short-linked robot arm in a square, *Discrete Comput. Geom.* **7**, 69–76.

Kantabutra, V. & Kosaraju, S. R. (1986), New algorithms for multilink robot arms, *J. Comput. Syst. Sci.* **32**(1), 136–53.

Kaul, A., O'Connor, M. A. & Srinivasan, V. (1991), Computing Minkowski sums of regular polygons, in *Proc. 3rd Canad. Conf. Comput. Geom.*, pp. 74–77.

Ke, Y. & O'Rourke, J. (1987), An algorithm for moving a ladder in three dimensions, Technical Report JHU-87/17, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD.

Ke, Y. & O'Rourke, J. (1988), Lower bounds on moving a ladder in two and three dimensions, *Discrete Comput. Geom.* **3**, 197–217.

Kedem, K. & Sharir, M. (1990), An efficient motion planning algorithm for a convex rigid polygonal object in 2-dimensional polygonal space, *Discrete Comput. Geom.* **5**, 43–75.

Kedem, K., Livne, R., Pach, J. & Sharir, M. (1986), On the union of Jordan regions and collision-free translational motion amidst polygonal obstacles, *Discrete Comput. Geom.* **1**, 59–71.

Keil, J. M. (1985), Decomposing a polygon into simpler components, *SIAM J. Comput.* **14**, 799–817.

Kirkpatrick, D. G. (1983), Optimal search in planar subdivisions, *SIAM J. Comput.* **12**, 28–35.

Kirkpatrick, D. G. & Seidel, R. (1986), The ultimate planar convex hull algorithm?, *SIAM J. Comput.* **15**, 287–99.

Kirkpatrick, D., Klawe, M. & Tarjan, R. (1990), Polygon triangulation in $O(n \log \log n)$ time with simple data structures, in *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pp. 34–43.

Klee, V. (1980), On the complexity of d-dimensional Voronoi diagrams, *Archiv der Mathematik* **34**, 75–80.

Knuth, D. E. (1969), *Seminumerical Algorithms*, Vol. 2 of *The Art of Computer Programming*, Addison-Wesley, Reading, MA.

Knuth, D. E. (1973), *Sorting and Searching*, Vol. 3 of *The Art of Computer Programming*, Addison-Wesley, Reading, MA.

Koenderink, J. J. (1990), *Solid Shape*, MIT Press, Cambridge, MA.

Koenderink, J. J. & van Doorn, A. J. (1976), The singularities of the visual mapping, *Biological Cybernetics* **24**, 51–9.

Koenderink, J. J. & van Doorn, A. J. (1979), The internal representation of solid shape with respect to vision, *Biological Cybernetics* **32**, 211–16.

Kutcher, J. (1992), Coordinated motion planning of planar linkages, PhD thesis, Johns Hopkins Univ.

Lakatos, I. (1976), *Proofs and Refutations: The Logic of Mathematical Discovery*, Cambridge Univ. Press, New York.

Laszlo, M. (1996) *Computational Geometry and Computer Graphics in C++*, Prentice Hall, Englewood Cliffs, NJ.

Latombe, J.-C. (1991), *Robot Motion Planning*, Kluwer Academic Publishers, Boston.

Lay, S. R. (1982), *Convex Sets and Their Applications*, Wiley, New York.

Lee, D. T. (1982), Medail axis transformation of a planar shape, *IEEE Trans. on PAMI* **4**, 363–69.

Lee, D. T. & Preparata, F. P. (1977), Location of a point in a planar subdivision and its applications, *SIAM J. Comput.* **6**, 594–606.

Lenhart, W. J. & Whitesides, S. H. (1991), Turning a polygon inside-out, in *Proc. 3rd Canad. Conf. Comput. Geom.*, pp. 66–9.

Lenhart, W. J. & Whitesides, S. H. (1992), Reconfiguration with line tracking motions, in *Proc. 4th Canad. Conf. Comput. Geom.*, pp. 198–203.

Lennes, N. J. (1911), Theorems on the simple finite polygon and polyhedron, *Am. J. Math.* **33**, 37–62.

Leven, D. & Sharir, M. (1987), An efficient and simple motion planning algorithm for a ladder moving in two-dimensional space amidst polygonal barriers, *J. Algorithms* **8**, 192–215.

Lipton, R. J. & Tarjan, R. E. (1980), Applications of a planar separator theorem, *SIAM J. Comput.* **9**, 615–27.

Lo, C.-Y., Matoušek, J. & Steiger, W. L. (1994), Algorithms for ham-sandwich cuts, *Discrete Comput. Geom.* **11**, 433–52.

Lozano-Pérez, T. (1983), Spatial planning: A configuration space approach, *IEEE Trans. Comput.* **C-32**, 108–20.

Lozano-Pérez, T. & Wesley, M. A. (1979), An algorithm for planning collision-free paths among polyhedral obstacles, *Commun. ACM* **22**, 560–70.

Malkevitch, J. (1988), Milestones in the history of polyhedra, in M. Senechal & G. Fleck, eds., *Shaping Space: A Polyhedral Approach*, Birkhäuser, Boston, pp. 80–92.

McKenna, M. (1987), Worst-case optimal hidden-surface removal, *ACM Trans. Graph.* **6**, 19–28.

McKenna, M. (1989), Applications of arrangements to geometric problems in higher dimensions, PhD thesis, Johns Hopkins Univ.

McKenna, M. & Seidel, R. (1985), Finding the optimal shadows of a convex polytope, in *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pp. 24–8.

Mehlhorn, K. (1984), *Multi-Dimensional Searching and Computational Geometry*, Vol. 3 of *Data Structures and Algorithms*, Springer-Verlag, Heidelberg.

Mehlhorn, K. & Näher, S. (1995), LEDA: A platform for combinatorial and geometric computing, *Commun. ACM* **38**, 96–102.

Mehlhorn, K. & Näher, S. (1998), *LEDA: A Platform for Combinatorial and Geometric Computing*, Cambridge University Press, New York.

Meisters, G. H. (1975), Polygons have ears, *Amer. Math. Monthly* **82**, 648–51.

Mendelson, B. (1990), *Introduction to Topology*, 3rd ed., Dover, New York.

Mitchell, J. S. B. (1996), Guillotine subdivisions approximate polygonal subdivisions: A simple new method for the geometric k-MST problem, in *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pp. 402–8.

Mizoguchi, R. & Kakusho, O. (1978), Hierarchical clustering algorithms based on k-nearest neighbors, in Proc. *4th Int. Joint Conf. Pattern Recogn.*, Kyoto, Japan, pp. 314–16.

Modayur, B. (1991). Problem posted on Usenet newsgroup Sci.math.

Mortenson, M. E. (1990), *Computer Graphics Handbook: Geometry and Mathematics*, Industrial Press.

Mulmuley, K. (1990), A fast planar partition algorithm, I, *J. Symbolic Comput.* **10**(3–4), 253–80.

Mulmuley, K. (1994), *Computational Geometry: An Introduction Through Randomized Algorithms*, Prentice Hall, Englewood Cliffs, NJ.

Mulmuley, K. & Schwarzkopf, O. (1997), Randomized algorithms, in J. E. Goodman & J. O'Rourke, eds., *Handbook of Discrete and Computational Geometry*, CRC Press LLC, Boca Raton, Chapter 34, pp. 633–52.

Nievergelt, J. & Preparata, F. P. (1982), Plane sweeping algorithms for intersecting geometric figures, *Commun. ACM* **25**, 739–47.

Ó'Dúnlaing, C. & Yap, C. K. (1985), A "retraction" method for planning the motion of a disk, *J. Algorithms* **6**, 104–11.

Ó'Dúnlaing, C., Sharir, M. & Yap, C. K. (1986), Generalized Voronoi diagrams for moving a ladder, I: Topological analysis, *Commun. Pure Appl. Math.* **39**, 423–83.

Ó'Dúnlaing, C., Sharir, M. & Yap, C. K. (1987), Generalized Voronoi diagrams for moving a ladder, II: Efficient construction of the diagram, *Algorithmica* **2**, 27–59.

Okabe, A., Boots, B. & Sugihara, K. (1992), *Spatial Tessellations: Concepts and Applications of Voronoi Diagrams*, Wiley, Chichester, England.

O'Rourke, J. (1981), An on-line algorithm for fitting straight lines between data ranges, *Commun. ACM* **24**, 574–8.

O'Rourke, J. (1985a), Finding minimal enclosing boxes, *Int. J. Comput. Inform. Sci.* **14**, 183–99.

O'Rourke, J. (1985b), A lower bound on moving a ladder, Report JHU/EECS-85/20, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD.

O'Rourke, J. (1987), *Art Gallery Theorems and Algorithms*, Oxford University Press, New York.

O'Rourke, J. (1993), Computational geometry column 19, *Int. J. Comput. Geom. Appl.* **3**, 221–4. Also in *SIGACT News* **24**(2):15–17, 1993.

O'Rourke, J. (1994), *Computational Geometry in C*, 1st ed., Cambridge University Press, Cambridge.

O'Rourke, J. (1997), Computational geometry column 31, *Int. J. Comput. Geom. Appl.* **7**, 379–82. Also in *SIGACT News*, **28**(2):20–23 (1997), Issue 103.

O'Rourke, J., Chien, C.-B., Olson, T. & Naddor, D. (1982), A new linear algorithm for intersecting convex polygons, *Comput. Graph. Image Process.* **19**, 384–91.

Pach, J., ed. (1993), *New Trends in Discrete and Computational Geometry*, Vol. 10 of *Algorithms and Combinatorics*, Springer-Verlag Berlin.

Pach, J. & Agarwal, P. K. (1995), *Combinatorial Geometry*, Wiley, New York.

Pach, J. & Sharir, M. (1991), On vertical visibility in arrangements of segments and the queue size in the Bentley–Ottman line sweeping algorithm, *SIAM J. Comput.* **20**, 460–70.

Pedoe, D. (1970), *Geometry: A Comprehensive Course*, Dover, New York.

Plantinga, H. & Dyer, C. R. (1990), Visibility, occlusion, and the aspect graph, *Int. J. Comput. Vision* **5**(2), 137–60.

Preparata, F. P. (1981), A new approach to planar point location, *SIAM J. Comput.* **10**, 473–82.

Preparata, F. P. & Hong, S. J. (1977), Convex hulls of finite sets of points in two and three dimensions, *Commun. ACM* **20**, 87–93.

Preparata, F. P. & Shamos, M. I. (1985), *Computational Geometry: An Introduction*, Springer-Verlag, New York. Corrected and expanded second printing, 1988.

Ramkumar, G. D. (1996), An algorithm to compute the Minkowski sum outer-face of two simple polygons, in *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pp. 234–41.

Rawlins, G. J. E. (1992), *Compared to What? An Introduction to the Analysis of Algorithms*, W. H. Freeman, New York.

Rogers, D. F. & Adams, J. A. (1990), *Mathematical Elements for Computer Graphics*, McGraw-Hill, New York.

Rucker, R. (1984), *The Fourth Dimension: Toward a Geometry of Higher Reality*, Houghton Mifflin, Boston.

Sack, J.-R. & Urrutia, J., eds. (1998), *Handbook on Computational Geometry*, North-Holland, Amsterdam. To appear.

Saeed, S. E. O., de Pennington, A. & Dodsworth, J. R. (1988), Offsetting in geometric modeling, *Comput. Aided Design* **20**(2), 67–74.

Samet, H. (1990), *The Design and Analysis of Spatial Data Structures*, Addison-Wesley, Reading, MA.

Schaudt, B. F. & Drysdale, R. L. (1991), Multiplicatively weighted crystal growth Voronoi diagrams, in *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pp. 214–23.

Schorn, P. (1991), The XYZ GeoBench: A programming environment for geometric algorithms, in *Lecture Notes in Comput. Sci.* Vol. 553, Springer-Verlag, Bern, pp. 187–202.

Schwartz, J. T. & Sharir, M. (1983a), On the "piano movers" problem I: The case of a two-dimensional rigid polygonal body moving amidst polygonal barriers, *Commun. Pure Appl. Math.* **36**, 345–98.

Schwartz, J. T. & Sharir, M. (1983b), On the "piano movers" problem II: General techniques for computing topological properties of real algebraic manifolds, *Adv. Appl. Math.* **4**, 298–351.

Schwartz, J. T. & Sharir, M. (1983c), On the "piano movers" problem III: Coordinating the motion of several independent bodies: The special case of circular bodies moving amidst polygonal barriers, *Int. J. Robot. Res.* **2**(3), 46–75.

Schwartz, J. T. & Sharir, M. (1984), On the "piano movers" problem V: The case of a rod moving in three-dimensional space amidst polyhedral obstacles, *Commun. Pure Appl. Math.* **36**, 345–98.

Schwartz, J. T. & Yap, C.-K. (1987), *Advances in Robotics I: Algorithmic and Geometric Aspects of Robotics*, Lawrence Erlbaum Associates, Hillsdale, NJ.

Sedgewick, R. (1992), *Algorithms in C++*, Addison-Wesley, Reading, MA.

Seidel, R. (1986), Output-size sensitive algorithms for constructive problems in computational geometry, Report TR 86-784, Dept. Comput. Sci., Cornell Univ., Ithaca, NY.

Seidel, R. (1991), A simple and fast incremental randomized algorithm for computing trapezoidal decompositions and for triangulating polygons, *Comput. Geom. Theory Appl.* **1**, 51–64.

Shamos, M. & Hoey, D. (1975), Closest point problems, in *Proc. 16th. Annu. IEEE Sympos. Found. Comput. Sci.*, pp. 151–62.

Shamos, M. I. (1978), Computational geometry, PhD thesis, Yale Univ., New Haven. UMI #7819047.

Sharir, M. (1987), Efficient algorithms for planning purely translational collision-free motion in two and three dimensions, in *Proc. IEEE Int. Conf. Robot. Autom.*, pp. 1326–31.

Sharir, M. & Agarwal, P. K. (1995), *Davenport–Schinzel Sequences and Their Geometric Applications*, Cambridge University Press, New York.

Sharir, M. & Ariel-Sheffi, E. (1984), On the "piano movers" problem IV: Various decomposable two-dimensional motion planning problems, *Commun. Pure Appl. Math.* **37**, 479–93.

Shermer, T. (1992), Recent results in art galleries, *Proc. IEEE* **80**(9), 1384–99.

Shewchuk, J. R. (1996), Robust adaptive floating-point geometric predicates, in *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pp. 141–50.

Shoemake, K. (1992), Uniform random rotations, in D. Kirk, ed., *Graphics Gems III*, Academic Press, Boston, pp. 124–32.

Sifrony, S. & Sharir, M. (1987), A new efficient motion-planning algorithm for a rod in two-dimensional polygonal space, *Algorithmica* **2**, 367–402.

Skiena, S. S. (1992), Interactive reconstruction via geometric probing, *Proc. IEEE* **80**(9), 1364–83.

Skiena, S. S. (1998), *The Algorithm Design Manual*, Telos/Springer-Verlag, New York.

Stolfi, J. (1991), *Oriented Projective Geometry: A Framework for Geometric Computations*, Academic Press, New York.

Subramaniyam, R. V. & Diwan, A. A. (1991), A counterexample for the sufficiency of edge guards in star polygons, *Inform. Process. Lett.* **40**, 97–9.

Sugihara, K. & Iri, M. (1992), Construction of the Voronoi diagram for 'one million' generators in single-precision arithmetic, *Proc. IEEE* **80**(9), 1471–84.

Sutherland, I. E., Sproull, R. F. & Shumacker, R. A. (1974), A characterization of ten hidden surface algorithms, *ACM Comput. Surv.* **6**, 1–55.

Suzuki, I. & Yamashita, M. (1996), Designing multi-link robot arms in a convex polygon, *Int. J. Comput. Geom. Appl.* **6**, 461–86.

Tarjan, R. E. & Van Wyk, C. J. (1988), An $O(n \log \log n)$-time algorithm for triangulating a simple polygon, *SIAM J. Comput.* **17**, 143–78.

Teller, S. J. (1992), Computing the antipenumbra of an area light source, *Comput. Graph.* **26**, 139–48.

Toussaint, G. T. (1983a), Computing largest empty circles with location constraints, *Int. J. Comput. Info. Sci.* **12**(5), 347–58.

Toussaint, G. T. (1983b), Solving geometric problems with the "rotating calipers," in *Proc. IEEE MELECON '83*, Athens, Greece, pp. A10.02/1–4.

Toussaint, G. T. (1985a), A historical note on convex hull finding algorithms, *Pattern Recogn. Lett.* **3**, 21–28.

Toussaint, G. T. (1985b), Movable separability of sets, in G. T. Toussaint, ed., *Computational Geometry*, North-Holland, Amsterdam, pp. 335–75.

Toussaint, G. T. (1986), New results in computational geometry relevant to pattern recognition in practice, in E. S. Gelsema & L. N. Kanal, eds., *Pattern Recognition in Practice II*, North-Holland, Amsterdam, pp. 135–46.

Toussaint, G. T. (1990), An output-sensitive polygon triangulation algrorithm, in *Proc. 8th Int. Conf. on Computer Graphics*, pp. 443–46.

Toussaint, G. T., ed. (1985c), *Computational Geometry*, North-Holland, Amsterdam.

Toussaint, G. T., ed. (1988), *Computational Morphology*, North-Holland, Amsterdam.

Vegter, G. (1990), The visibility diagram: A data structure for visibility problems and motion planning, in *Proc. 2nd Scand. Workshop Algorithm Theory*, Vol. 447 of *Lecture Notes in Comput. Sci.*, Springer-Verlag, New York, pp. 97–110.

Whitesides, S. (1991), Algorithmic issues in the geometry of planar linkages, *Australian Comput. J.* **24**(2), 42–51.

Yao, C. & Rokne, J. G. (1991), A straightforward algorithm for computing the medial axis of a simple polygon, *Int. J. Comput. Math.* **39**, 51–60.

Yap, C.-K. (1987), How to move a chair through a door, *IEEE J. of Robot. Autom.* **RA-3**(3), 172–81.

Yap, C.-K. (1997), Robust geometric computation, in J. E. Goodman & J. O'Rourke, eds., *Handbook of Discrete and Computational Geometry*, CRC Press LLC, Boca Raton, Chapter 35, pp. 653–68.