

## References

- Alfeld, P. (1989), Scattered Data Interpolation in Three or More Variables, in: Lyche, T., and Schumaker, L., eds., *Mathematical Methods in Computer Aided Geometric Design*, Academic Press, pp. 1–33.
- Arge, E., Dæhlen, M., Lyche, T., and Mørken, K. (1990), Constrained Spline Approximation of Functions and Data Based on Constrained Knot Removal, in: Mason, J.C., and Cox, M.G., eds., *Algorithms for Approximation II*, Chapman and Hall, New York, pp. 4–20.
- Ball, A.A. (1974), Consurf I, *CAD*, Vol. **6**, pp. 243–249.
- Ball, A.A. (1975), Consurf II, *CAD*, Vol. **7**, pp. 237–242.
- Ball, A.A. (1977), Consurf III, *CAD*, Vol. **9**, pp. 9–12.
- Ballard, D.H., and Brown, C.M. (1982), *Computer Vision*, Prentice Hall.
- Banchoff, T.F. (1990), *Beyond the Third Dimension*, Scientific American Library, New York.
- Barnhill, R.E. (1985), Surfaces in Computer Aided Geometric Design: A Survey with New Results, *Computer Aided Geometric Design*, Vol. **2**, No. **1-3**, pp. 1–17.
- Barnhill, R.E., Birkhoff, G., and Gordon, W.J. (1973), Smooth Interpolation in Triangles, *Journal of Approximation Theory*, Vol. **8**, pp. 114–128.
- Barnhill, R.E., and Farin, G. (1981),  $C^1$  Quintic Interpolation over Triangles: Two Explicit Representations, *International Journal of Numerical Methods in Engineering*, Vol. **17**, pp. 1763–1778.
- Barnhill, R.E., and Little, F.F. (1984), Three- and Four-Dimensional Surfaces, *The Rocky Mountain Journal of Mathematics*, Vol. **14**, No. **1**, pp. 77–102.
- Bloomquist, B.K. (1990), *Contouring Trivariate Surfaces*, Masters Thesis, Arizona State University, Computer Science Department.

- Boehm, W. (1982), On Cubics, a Survey, *Computer Graphics and Image Processing*, Vol. **19**, pp. 201–226.
- Boehm, W., Gose, G., and Kahmann, J. (1977), *Methoden der Numerischen Mathematik* (Methods of Numerical Mathematics, in German), Vieweg, Braunschweig, Germany.
- Boehm, W., Farin, G., and Kahmann, J. (1984), A Survey of Curve and Surface Methods in CAGD, *Computer Aided Geometric Design*, Vol. **1**, pp. 1–60.
- Brauner, H. (1981), *Differentialgeometrie* (Differential Geometry, in German), Vieweg, Braunschweig, Germany.
- Broida, J.G., and Williamson, S.G. (1989), *A Comprehensive Introduction to Linear Algebra*, Addison-Wesley, New York.
- Calladine, C.R. (1986), Gaussian Curvature and Shell Structures, in: Gregory, J., ed., *Mathematics of Surfaces*, Clarendon Press, Oxford, pp. 179–196.
- Carmo, M.P. do (1976), *Differential Geometry of Curves and Surfaces*, Englewood Cliffs, New Jersey.
- Choi, B.K., Shin, H.Y., Yoon, Y.I., and Lee, J.W. (1988), Triangulation of Scattered Data in 3D Space, *CAD*, Vol. **20**, No. **5**, pp. 239–248.
- Chuang, J.H., and Hoffmann, C.M. (1990), *Curvature Computations on Surfaces in n-Space*, Technical Report #90.2, The Leonardo Fibonacci Institute, Trento, Italy.
- Cline, A.K., and Renka, R.J. (1984), A storage-efficient method for construction of a Thiessen triangulation, *The Rocky Mountain Journal of Mathematics*, Vol. **14**, No. **1**, pp. 119–139.
- Dahmen, W. (1989), Smooth Piecewise Quadric Surfaces, in: Lyche, T., and Schumaker, L.L., eds., *Mathematical Methods in Computer Aided Geometric Design*, Academic Press, pp. 181–193.
- Davis, P.J. (1975), *Interpolation and Approximation*, Dover Publications, New York.
- Drebin, R.A., Carpenter, L., and Hanrahan, P. (1988), Volume Rendering, *Computer Graphics*, Vol. **22**, No. **4**, pp. 65–74.

Dürst M.J. (1988), Letters: Additional Reference to “Marching Cubes,” *Computer Graphics*, Vol. **22**, No. **2**.

Dyn, N., Levin, D., and Rippa, S. (1990a), Data Dependent Triangulations for Piecewise Linear Interpolation, in: *IMA Journal of Numerical Analysis*, **10**, pp. 137–154.

Dyn, N., Levin, D., and Rippa, S. (1990b), Algorithms for the Construction of Data Dependent Triangulations, in: Mason, J.C., and Cox, M.G., eds., *Algorithms for Approximation II*, Chapman and Hall, New York, pp. 4–20.

Farin, G. (1983), Smooth Interpolation to Scattered 3D Data, in: Barnhill, R.E., and Boehm, W., eds., *Surfaces in CAGD*, North Holland, pp. 43–63.

Farin, G. (1986), Triangular Bernstein-Bézier Patches, *Computer Aided Geometric Design*, Vol. **3**, No. **2**, pp. 83–127.

Farin, G. (1990), *Curves and Surfaces for Computer Aided Geometric Design*, 2nd Edition, Academic Press.

Faux, I., and Pratt, M. (1979), *Computational Geometry for Design and Manufacture*, Ellis Horwood.

Foley, T.A. (1987), Interpolation and Approximation of Three- and Four-Dimensional Scattered Data, *Computational Mathematics Applications*, Vol. **13**, pp. 711–740.

Foley, T.A., and Lane, D.A. (1990), Visualization of Irregular Multivariate Data, *Proceedings of the IEEE Conference Visualization '90*, San Francisco, pp. 247–254.

Foley, T.A., Lane, D.A., and Nielson, G.M. (1990), Towards Animating Ray-Traced Volume Visualization, *Visualization and Computer Animation Journal*, Vol. **1**, No. **1**, pp. 2–8.

Franke, R., and Nielson, G.M. (1991), Scattered Data Interpolation and Applications: A Tutorial and Survey, in: Hagen, H., and Roller, D., eds., *Geometric Modeling: Methods and Applications*, Springer-Verlag, pp. 131–160.

Fu, K.S., Gonzalez, R.C., and Lee, C.S.G. (1987), *Robotics*, McGraw-Hill.

Fuchs, H., Levoy, M., and Pizer, S.M. (1989), Interactive Visualization of 3D Medical Data, *Computer*, Vol. **22**, No. **8**, pp. 46–51.

- Hagen, H., and Pottmann, H. (1989), Curvature Continuous Triangular Interpolants, in: Lyche, T., and Schumaker, L.L., eds., *Mathematical Methods in Computer Aided Geometric Design*, Academic Press, pp. 373–384.
- Hamann, B. (1988), *Glättungsalgorithmen für Kurven und Flächen in CAGD* (Algorithms for Smoothing Curves and Surfaces in CAGD, in German), Masters thesis, Technical University of Braunschweig, Computer Science Department, Germany.
- Hamann, B. (1990a), Visualisierungstechniken zur Darstellung dreidimensionaler Datenmengen (Techniques for Visualizing Three-dimensional Data Sets, in German), in: *CAD Computergrafik*, Vol. **14**, No. **2**, Austria, pp. 129–139.
- Hamann, B. (1990b), Modeling Contours of Trivariate Data, in: *Mathematical Modelling and Numerical Analysis (Modélisation Mathématique et Analysis Numérique)*, Vol. **26**, No. **1**, France, pp. 51–75.
- Hamann, B., Farin, G., and Nielson, G.M. (1990), A Parametric Triangular Patch Based on Generalized Conics, in: Farin, G., ed., *NURBS for Curve and Surface Design*, SIAM, Philadelphia, pp. 75–85.
- Hamann, B. and Foley, T.A. (1991), A Quartic Spline Based on a Variational Approach, manuscript.
- Herron, G. (1985), Smooth Closed Surfaces with Discrete Triangular Interpolants, *Computer Aided Geometric Design*, Vol. **2**, No. **4**, pp. 297–306.
- Hoschek, J., and Lasser, D. (1989), *Grundlagen der Geometrischen Datenverarbeitung* (Fundamentals of Geometrical Data Processing, in German), Teubner, Stuttgart, Germany.
- Kajiya, J., and Herzen, B. von (1984), Ray Tracing Volume Densities, *Computer Graphics*, Vol. **18**, No. **3**, pp. 165–173.
- Lang, S. (1966), *Linear Algebra*, Addison-Wesley, New York.
- Lasser, D. (1987), *Bernstein-Bézier-Darstellung trivariater Splines* (Bernstein-Bézier representation of trivariate splines, in German), Dissertation, Technical University of Darmstadt, Mathematics Department, Germany.
- Lawson, C.L. (1977), Software for  $C^1$  Surface Interpolation, in: Rice, J.R., ed., *Mathematical Software III*, Academic Press, pp. 161–194.

- Le Méhauté, A.J.Y., and Lafranche, Y. (1989), A Knot Removal Strategy for Scattered Data in  $\mathbb{R}^2$ , in: Lyche, T., and Schumaker, L.L., eds., *Mathematical Methods in Computer Aided Geometric Design*, Academic Press, pp. 419–426.
- Levoy, M. (1988), Display of Surfaces from Volume Data, *IEEE Computer Graphics and Applications*, Vol. **8**, No. **3**, pp. 29–37.
- Levoy, M. (1990), Volume Rendering, *IEEE Computer Graphics and Applications*, Vol. **10**, No. **2**, pp. 33–40.
- Lipschutz, M.M. (1980), *Differential Geometry*, Schaum's outline series, McGraw-Hill.
- Long, M.B., Lyons, K., and Lam, J.K. (1989), Acquisition and Representation of 2D and 3D Data from Turbulent Flows and Flames, *Computer*, Vol. **22**, No. **8**, pp. 39–45.
- Lorensen, W.E., and Cline, H.E. (1987), Marching Cubes: A High Resolution 3D Surface Construction Algorithm, *Computer Graphics*, Vol. **21**, No. **4**, pp. 163–169.
- Lyche, T., and Mørken, K. (1987), Knot Removal for Parametric B-Spline Curves and Surfaces, *Computer Aided Geometric Design*, Vol. **4**, No. **3**, pp. 217–230.
- Lyche, T., and Mørken, K. (1988), A Data-Reduction Strategy for Splines with Applications to the Approximation of Functions and Data, *IMA Journal of Numerical Analysis*, Vol. **8**, pp. 185–208.
- Ney, D.R., Fishman, E.K., Magid, D., and Drebin, R.A. (1990), Volumetric Rendering, *IEEE Computer Graphics and Applications*, Vol. **10**, No. **2**, pp. 24–32.
- Nielson, G.M. (1979), The Side-Vertex Method for Interpolation in Triangles, *Journal of Approximation Theory*, Vol. **25**, pp. 318–336.
- Nielson, G.M. (1987), A Transfinite, Visually Continuous, Triangular Interpolant, in: Farin, G., ed., *Geometric Modeling: Algorithms and New Trends*, SIAM Publications, Philadelphia, pp. 235–246.
- Nielson, G.M., and Franke, R. (1983), Surface Construction Based upon Triangulations, in: Barnhill, R.E., and Boehm, W., eds., *Surfaces in CAGD*, North Holland.
- Nielson, G.M., and Hamann, B. (1990), Techniques for the Interactive Visualization of Volumetric Data, *Proceedings of the IEEE Conference Visualization*

- '90, San Francisco, pp. 45–50.
- Nielson, G.M. and Hamann, B. (1991), The Asymptotic Decider: Resolving the Ambiguity in Marching Cubes, in: Nielson, G.M. and Rosenblum, L. J., eds., *Visualization '91*, IEEE Computer Society Press, Los Alamitos, California, pp. 83–91.
- Nielson, G.M., Foley, T.A., Hamann, B., and Lane, D.A. (1991), Visualizing and Modeling Scattered Multivariate Data, *IEEE Computer Graphics and Applications*, Vol. **11**, No. **3**, pp. 47–55.
- O'Neill, B. (1969), *Elementary Differential Geometry*, Academic Press, 3rd Printing.
- Petersen, C.S. (1984), Adaptive Contouring of Three-Dimensional Surfaces, *Computer Aided Geometric Design*, Vol. **1**, No. **1**, pp. 61–74.
- Petersen, C.S., Piper, B.R., and Worsey, A.J. (1987), Adaptive Contouring of a Trivariate Interpolant, in: Farin, G., ed., *Geometric Modeling: Algorithms and New Trends*, SIAM Publications, Philadelphia, pp. 385–395.
- Pillis, J.de (1969), *Linear Algebra*, Holt, Rinehart and Winston, New York.
- Piper, B.R. (1987), Visually Smooth Interpolation with Triangular Bézier Patches, in: Farin, G., ed., *Geometric Modeling: Algorithms and New Trends*, SIAM Publications, Philadelphia, pp. 221–233.
- Pottmann, H. (1989), Scattered Data Interpolation Based upon Generalized Minimum Norm Networks, submitted to *Constructive Approximation Theory*.
- Preparata, F.P., and Shamos, M.I. (1990), *Computational Geometry: An Introduction*, 2nd Printing, Springer-Verlag, New York.
- Rath, W. (1988), Computergestützte Darstellungen von Hyperflächen des  $\mathbb{R}^4$  und deren Anwendungsmöglichkeiten im CAGD (Computer Assisted Representations of Hypersurfaces in  $\mathbb{R}^4$  and their Applications in CAGD, in German), *CAD Computergraphik*, Vol. **11**, No. **4**, pp. 111–117.
- Sabella, P. (1988), A Rendering Algorithm for Visualizing 3D Scalar Fields, *Computer Graphics*, Vol. **22**, No. **4**, pp. 51–55.
- Sederberg, T.W. (1985), Piecewise Algebraic Surface Patches, *Computer Aided Geometric Design*, Vol. **2**, No. **1–3**, pp. 53–59.

- Spivak, M. (1970), *Comprehensive Introduction to Differential Geometry*, Vol. 1–5, Publish or Perish, Waltham, Massachusetts.
- Stead, S.E. (1984), Estimation of Gradients from Scattered Data, *Rocky Mountain Journal of Mathematics*, Vol. 14, No. 1, pp. 265–279.
- Strubecker, K. (1955), *Differentialgeometrie I* (Differential Geometry I, in German), De Gruyter, Berlin, Germany.
- Strubecker, K. (1958), *Differentialgeometrie II* (Differential Geometry II, in German), De Gruyter, Berlin, Germany.
- Strubecker, K. (1959), *Differentialgeometrie III* (Differential Geometry III, in German), De Gruyter, Berlin, Germany.
- Struik, D.J. (1961), *Lectures on Classical Differential Geometry*, Dover Publications, New York.
- Tiede, U., Höhne, K.H., Bomans, M., Pommert, A., Riemer, M., and Wiebecke, G. (1990), Surface Rendering, *IEEE Computer Graphics and Applications*, Vol. 10, No. 2, pp. 41–53.
- Weld, J.D. (1990), *Differential Geometric Interrogation of Parametrized Hyperpatches*, AT&T Bell Laboratories, Whippny, New Jersey 07981, manuscript.
- Worsey, A.J., and Farin, G. (1987), An N-Dimensional Clough-Tocher Element, *Constructive Approximation*, Vol. 3, pp. 99–110.
- Yamaguchi, F. (1988), *Curves and Surfaces in Computer Aided Geometric Design*, Springer-Verlag, New York.
- Zucker, S.W., and Hummel, R.A. (1981), A Three-Dimensional Edge Operator, *IEEE Transactions on Pattern Recognition and Machine Intelligence*, Vol. PAMI-3, No. 3, pp. 324–331.