

Bibliography

- [1] Kurt Akeley. Realityengine graphics. In *SIGGRAPH '93*, pages 109–116, 1993.
- [2] Ali Azarbayejani and Alex Pentland. Recursive estimation of motion, structure, and focal length. *IEEE Trans. Pattern Anal. Machine Intell.*, 17(6):562–575, June 1995.
- [3] H. H. Baker and T. O. Binford. Depth from edge and intensity based stereo. In *Proceedings of the Seventh IJCAI, Vancouver, BC*, pages 631–636, 1981.
- [4] Shawn Becker and V. Michael Bove Jr. Semiautomatic 3-d model extraction from uncalibrated 2-d camera views. In *SPIE Symposium on Electronic Imaging: Science and Technology*, Feb 1995.
- [5] P. Besl. Active optical imaging sensors. In J. Sanz, editor, *Advances in Machine Vision: Architectures and Applications*. Springer Verlag, 1989.
- [6] A. Blake and A. Zisserman. *Visual Reconstruction*. MIT Press, Cambridge, MA, 1987.
- [7] Brian Curless and Marc Levoy. A volumetric method for building complex models from range images. In *SIGGRAPH '96*, pages 303–312, 1996.

- [8] Paul Debevec. The chevette project. Image-based modeling of a 1980 Chevette from silhouette contours performed in summer 1991.
- [9] Paul E. Debevec, Camillo J. Taylor, and Jitendra Malik. Modeling and rendering architecture from photographs: A hybrid geometry- and image-based approach. In *SIGGRAPH '96*, pages 11–20, August 1996.
- [10] D.J.Fleet, A.D.Jepson, and M.R.M. Jenkin. Phase-based disparity measurement. *CVGIP: Image Understanding*, 53(2):198–210, 1991.
- [11] O.D. Faugeras, Q.-T. Luong, and S.J. Maybank. Camera self-calibration: theory and experiments. In *European Conference on Computer Vision*, pages 321–34, 1992.
- [12] Oliver Faugeras and Giorgio Toscani. The calibration problem for stereo. In *Proceedings IEEE CVPR 86*, pages 15–20, 1986.
- [13] Olivier Faugeras. *Three-Dimensional Computer Vision*. MIT Press, 1993.
- [14] Olivier Faugeras, Stephane Laveau, Luc Robert, Gabriella Csurka, and Cyril Zeller. 3-d reconstruction of urban scenes from sequences of images. Technical Report 2572, INRIA, June 1995.
- [15] Thomas Funkhauser and C. H. Sequin. Adaptive display algorithm for interactive frame rates during visualization of complex virtual environments. In *SIGGRAPH '93*, pages 247–254, 1993.
- [16] Steven J. Gortler, Radek Grzeszczuk, Richard Szeliski, and Michael F. Cohen. The lumigraph. In *SIGGRAPH '96*, pages 43–54, 1996.

- [17] W. E. L. Grimson. *From Images to Surface*. MIT Press, 1981.
- [18] George Heard Hamilton. *Claude Monet's paintings of Rouen Cathedral*. Oxford University Press, 1990.
- [19] Paul S. Heckbert. Survey of texture mapping. *IEEE Computer Graphics and Applications*, 6(11):56–67, November 1986.
- [20] David J. Heeger and James R. Bergen. Pyramid-based texture analysis/synthesis. In *SIGGRAPH '95*, pages 229–238, 1995.
- [21] H. Hoppe, T. DeRose, T. Duchamp, M. Halstead, H. Jin, J. McDonald, J. Schweitzer, and W. Stuetzle. Piecewise smooth surface reconstruction. In *ACM SIGGRAPH 94 Proc.*, pages 295–302, 1994.
- [22] D. Jones and J. Malik. Computational framework for determining stereo correspondence from a set of linear spatial filters. *Image and Vision Computing*, 10(10):699–708, December 1992.
- [23] E. Kruppa. Zur ermittlung eines objectes aus zwei perspektiven mit innerer orientierung. *Sitz.-Ber. Akad. Wiss., Wien, Math. Naturw. Kl., Abt. IIa.*, 122:1939–1948, 1913.
- [24] Stephane Laveau and Olivier Faugeras. 3-d scene representation as a collection of images. In *Proceedings of 12th International Conference on Pattern Recognition*, volume 1, pages 689–691, 1994.
- [25] H.C. Longuet-Higgins. A computer algorithm for reconstructing a scene from two projections. *Nature*, 293:133–135, September 1981.

- [26] D. Marr and T. Poggio. A computational theory of human stereo vision. *Proceedings of the Royal Society of London*, 204:301–328, 1979.
- [27] Leonard McMillan and Gary Bishop. Plenoptic modeling: An image-based rendering system. In *SIGGRAPH '95*, 1995.
- [28] Barbara J. Meier. Painterly rendering for animation. In *SIGGRAPH '96*, pages 477–484, 1996.
- [29] Eric N. Mortensen and William A. Barrett. Intelligent scissors for image composition. In *SIGGRAPH '95*, 1995.
- [30] Michael Naimark. *Displacements*. San Francisco Museum of Modern Art, 1984.
- [31] Michael Naimark, John Woodfill, Paul Debevec, and Leo Villareal. Immersion '94. Interval Research Corporation image-based modeling and rendering project from Summer 1994.
- [32] H. K. Nishihara. Practical real-time imaging stereo matcher. *Optical Engineering*, 23(5):536–545, 1984.
- [33] P. Perona and J. Malik. Scale space and edge detection using anisotropic diffusion. In *IEEE Workshop on Computer Vision*, pages 16–22, 1987.
- [34] Joachim Pissarro. *Monet's Cathedral : Rouen, 1892-1894*. New York : Knopf, 1990.
- [35] S. B. Pollard, J. E. W. Mayhew, and J. P. Frisby. A stereo correspondence algorithm using a disparity gradient limit. *Perception*, 14:449–470, 1985.
- [36] Przemyslaw Prusinkiewicz, Mark James, and Radomir Mech. Synthetic topiary. In *SIGGRAPH '94*, pages 351–358, July 1994.

- [37] D. Scharstein. Stereo vision for view synthesis. In *Computer Vision and Pattern Recognition*, June 1996.
- [38] Daniel Scharstein and Richard Szeliski. Stereo matching with non-linear diffusion. In *CVPR*, pages 343–350, 1996.
- [39] Mark Segal, Carl Korobkin, Rolf van Widenfelt, Jim Foran, and Paul Haeberli. Fast shadows and lighting effects using texture mapping. In *SIGGRAPH '92*, pages 249–252, July 1992.
- [40] H. Shum, M. Hebert, K. Ikeuchi, and R. Reddy. An integral approach to free-formed object modeling. *ICCV*, pages 870–875, 1995.
- [41] Steven Smith. *Geometric Optimization Methods for Adaptive Filtering*. PhD thesis, Harvard University, Division of Applied Sciences, Cambridge MA, September 1993.
- [42] M. Soucy and D. Lauendeau. Multi-resolution surface modeling from multiple range views. In *Proc. IEEE Computer Vision and Pattern Recognition*, pages 348–353, 1992.
- [43] Steve Sullivan and Jean Ponce. Constructing 3d object models from photographs. Technical Sketch, Siggraph 1996, Unpublished.
- [44] R. Szeliski. Image mosaicing for tele-reality applications. In *IEEE Computer Graphics and Applications*, 1996.
- [45] Richard Szeliski and Rich Weiss. Robust shape recovery from occluding contours using a linear smoother. Technical Report 93/7, Digital Equipment Corporation, December 1993.
- [46] Camillo J. Taylor and David J. Kriegman. Minimization on the lie group $so(3)$ and related

- manifolds. Technical Report 9405, Center for Systems Science, Dept. of Electrical Engineering, Yale University, New Haven, CT, April 1994.
- [47] Camillo J. Taylor and David J. Kriegman. Structure and motion from line segments in multiple images. *IEEE Trans. Pattern Anal. Machine Intell.*, 17(11), November 1995.
- [48] S. J. Teller, Celeste Fowler, Thomas Funkhouser, and Pat Hanrahan. Partitioning and ordering large radiosity computations. In *SIGGRAPH '94*, pages 443–450, 1994.
- [49] S. J. Teller and C. H. Sequin. Visibility preprocessing for interactive walkthroughs. In *SIGGRAPH '91*, pages 61–69, 1991.
- [50] Carlo Tomasi and Takeo Kanade. Shape and motion from image streams under orthography: a factorization method. *International Journal of Computer Vision*, 9(2):137–154, November 1992.
- [51] Ling Ling Wang; Wen-Hsiang Tsai. Camera calibration by vanishing lines for 3-d computer vision. *IEEE Trans. Pattern Anal. Machine Intell.*, 13(4):370–376, April 1991.
- [52] Roger Tsai. A versatile camera calibration technique for high accuracy 3d machine vision metrology using off-the-shelf tv cameras and lenses. *IEEE Journal of Robotics and Automation*, 3(4):323–344, August 1987.
- [53] Greg Turk and Marc Levoy. Zippered polygon meshes from range images. In *SIGGRAPH '94*, pages 311–318, 1994.
- [54] S. Ullman. *The Interpretation of Visual Motion*. The MIT Press, Cambridge, MA, 1979.

- [55] M. Watanabe and S. K. Nayar. Telecentric optics for computational vision. In *Proceedings of Image Understanding Workshop (IUW 96)*, February 1996.
- [56] L Williams. Casting curved shadows on curved surfaces. In *SIGGRAPH '78*, pages 270–274, 1978.
- [57] Lance Williams and Eric Chen. View interpolation for image synthesis. In *SIGGRAPH '93*, 1993.
- [58] Y.Chen and G. Medioni. Object modeling from multiple range images. *Image and Vision Computing*, 10(3):145–155, April 1992.
- [59] Ramin Zabih and John Woodfill. Non-parametric local transforms for computing visual correspondence. In *European Conference on Computer Vision*, pages 151–158, May 1994.

Appendix A

Obtaining color images and animations

The methods presented in this thesis make many tradeoffs between generality and practicality, automation and interaction, and rigor and recklessness, but at no time is a tangent taken from the pursuit of photorealism. Thus, to fully experience what has been done, this work should be viewed at full resolution, in color, and in motion. The ink squeezed onto the paper in front of you is quite likely not up to the task.

Images and animations from this work are, as of this writing, at the following web site:

`http://www.cs.berkeley.edu/~debevec/Research`

This site will not be in existence indefinitely; however, there is some precedence at Berkeley for maintaining home pages well after a person's graduation, so you may find a link to this research from:

`http://www.cs.berkeley.edu/~debevec`

If neither of these sites work, if you search for "Paul E. Debevec" using an internet search engine, you should be able to find the current incarnation of my home page or references to it. I will

maintain a link to the images and animations from my thesis on my home page. Also, the PostScript version of this thesis contains many color images, so if you are able to download the PostScript file and print it on a color printer you may see a number of the images in color.

Currently, there is an extensive web page on the art installation *Rouen Revisited* complete with color images and animations on Interval Research Corporation's web site:

<http://www.interval.com/projects/rouen/>

Lastly, many of the images were printed in color in the SIGGRAPH '96 proceedings [9], which had a companion CD-ROM and videotape. The CD-ROM contained uncompressed versions of the SIGGRAPH images, as well as lower-resolution Apple QuickTime movies of the University High School fly-around and the Peterhouse chapel façade animation. This work appears as the first segment on the SIGGRAPH '96 videotape, which presents a two-minute overview of Façade, the photogrammetric modeling system, and then full-resolution versions of the University High School and Peterhouse Chapel façade animations.