

### 1.3.7 Three-Dimensional Graphics and Realism

WATKINS, CHRISTOPHER D. (Algorithm, Inc., 9610-0791  
Atlanta, GA); AND MALLETT, VINCENT  
(Georgia Institute of Technology, Atlanta)  
**Stereogram programming techniques.**  
Charles River Media, Inc., Rockland, MA, 1996,  
413 pp., \$29.95, ISBN 1-886801-00-2.

The title indicates that this is a special-interest book, but the contents are suitable for a wider audience. Early chapters deal with the history of two-image stereograms; these are usually viewed through an optical device, but a number of two-image stereograms that can be seen without aids are presented in the book. There is an excellent presentation of the psychophysics of stereo perception for the average reader. The story then turns to the use of computers to create binary stereograms made up of seemingly random dots (first done by Bela Julesz). Next, it was realized that a single set of random dots could fool the eye into seeing stereo (these are now called SIRDSs, single image random dot stereograms). The SIRDS algorithms are based on each dot performing double duty in establishing the binocular disparity that creates the perception of three dimensions. More generally, horizontally repetitive patterns, usually like tiles, can achieve the same effect. (These are SISs, single image stereograms.)

The book does an excellent job of starting with the geometry and logic of each algorithm and then giving the source code in C with explanatory comments. There are 12 outside contributors of algorithms and hand-created SISs of great quality. There are 79 illustrations, with 8 on color plates. The book comes with a floppy disk containing source and executables. I had no trouble using one of the routines provided to create a custom SIRDS. There are ten pages listing Internet resources.

Watkins covers a great breadth of history and knowledge in an interesting and breezy writing style. Even if one ignores the algorithms, this is an interesting book, and could be considered for a gift or coffee-table purchase.

— Albert L. Zobrist, Westlake Village, CA

GENERAL TERMS: ALGORITHMS, DESIGN, THEORY