Errata for 'Fundamentals of Texture Mapping and Image Warping'

1 Apr 98 -ph

page 20, sign errors in two of the eight equations near top; they should read:

$$a + b + c - gx_2 - hx_2 = x_2$$
$$d + e + f - gy_2 - hy_2 = y_2$$

pages 34, 35: There should be a spike the same height as the others at $\omega = 0$ in figures 3.4b and 3.5b.

page 41, coefficient on sinc should read:

$$\frac{\omega_c}{\pi}\mathrm{sinc}(\frac{\omega_c}{\pi}x) = \frac{\sin(\omega_c x)}{\pi x} \qquad \leftrightarrow \qquad b_1\Big(\frac{\omega}{2\omega_c}\Big) = \begin{cases} 1 & |\omega| \le \omega_c \\ 0 & |\omega| > \omega_c \end{cases}$$

page 42, figure 3.10: swap curves in the two plots (but not the labels).

pages 45, 50: should say that $\mathbf{J}$ is the transpose of the Jacobian (not the Jacobian itself).

page 51, center: magnification filter should read:

$$\rho(\mathbf{x}, \mathbf{k}) \approx r(\mathbf{m}^{-1}(\mathbf{x}) - \mathbf{k})$$

page 56, last line, the reconstruction filter and prefilter should have variance of .5 (see page 41), so $\mathbf{V}_r = \mathbf{V}_h = \mathbf{I}/4$, and $\rho'(\mathbf{u}) = g_{(\mathbf{J}^{-1T}\mathbf{J}^{-1}+\mathbf{I})/4}(\mathbf{u})$. Corresponding changes on page 60, also.

page 58, clarification: for EWA, I used $\alpha = 2$.

page 73, Inference of texture-to-object transforms is often unnecessary. Instead of computing the matrix $\mathbf{M_{ts}}$ as described in section 2.3.2, the variables uq, vq, and q of page 26 are simply u/w, v/w, and 1/w, where w is the homogeneous screen coordinate after transformation from object or world space. For a derivation of this simpler and faster scheme for computing homogeneous texture coordinates, see Paul S. Heckbert and Henry P. Moreton, "Interpolation for Polygon Texture Mapping and Shading", *State of the Art in Computer Graphics: Visualization and Modeling*, David F. Rogers and Rae A. Earnshaw, eds., Springer-Verlag, New York, 1991, pp. 101-111. For code, see Paul S. Heckbert, "Generic Convex Polygon Scan Conversion and Clipping", Andrew Glassner, ed., *Graphics Gems*, Academic Press, Boston, 1990, pp. 84-86, 667-680.

page 79, center: center matrix should be identity; should read:

$$= \begin{pmatrix} A & B/2 \\ B/2 & C \end{pmatrix} = \frac{1}{ab}\begin{pmatrix} b\cos\theta & -a\sin\theta \\ b\sin\theta & a\cos\theta \end{pmatrix}\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}\begin{pmatrix} b\cos\theta & b\sin\theta \\ -a\sin\theta & a\cos\theta \end{pmatrix}\frac{1}{ab}$$

page 80: should say that $\mathbf{M}$ is the transpose of the Jacobian (not the Jacobian itself).

page 85, [Roberts66] paper number should read MS-1405.

A nice follow-up to this thesis is: Robert C. Lansdale, *Texture Mapping and Resampling for Computer Graphics*, Master's thesis, EE Dept., U. of Toronto, Jan. 1991.