Winged standard-bearer ascends in land of computer magic

Seeking a cover for this month’s special issue on computer graphics in Japan, the IEEE Computer Graphics and Applications editorial staff enlisted the help of Jinko Gotoh, a Los Angeles-based, free-lance commercial film producer. She looked into some of the leading computer graphics production houses and learned that MAGI (Mathematical Applications Group Inc.) had produced a computer-generated, animated film segment to be part of the Omnimax film presentation at this summer’s Siggraph 84 conference in Minneapolis (July 23-27). Most fortunately for IEEE CG&A, the film has an oriental flavor.

Gotoh went to MAGI in New York and consulted with Michael Ferraro and Tom Bisogno, who had developed the imagery and animation for the film.

“Luckily,” says Gotoh, “they had developed a technique that computes each element separately—a pagoda, a bird, a bridge, for example—and then merges them in three dimensions to compose the final image. This technique allows creative freedom and simplifies the shading computations.”

For our cover picture, Ferraro created a new element, the Japanese flag, and at Gotoh’s suggestion, placed it in the beak of the bird.

The animated film from which the cover was adapted emerged from a creative exploration of illusionism in computer-generated imagery. The film gives the viewer the illusion of being carried on the wings of a bird as it travels through a magical garden.

Ferraro and Bisogno used MAGI Synthesis solid modeling and animation software to generate the imagery, which was computed at MAGI’s Elmsford, New York, office on Gould 3287 and Perkin-Elmer 3240 computers. The segment was filmed on a Celco CFR4000 film recorder at 1680 x 1200-pixel resolution. Composition and animation previewing were done on Raster Technologies’ Model One frame buffer.

The image elements were modeled by means of MAGI’s fast ray-tracing geometry programs, which use spline curves and the Boolean operations of constructive solid geometry. Models were shaded with an experimental version of MAGI’s image program, which includes a procedural texture model, atmospheric effects, and a lighting model. This experimental software was developed by Eugene Troubetsoy, Ken Perlin, Josh Pines, Michael Ferraro, Tom Bisogno, and Carl Ludwig.

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