ABOUT THE COVER

Our August cover is a three-dimensional computer animation produced by the Motion Picture Project at Information International, Inc., of Culver City, California.

It is the first public showing of the Star Wars X-wing database, one of the most refined yet.

Digital slit-scan simulation was used to create the corridor of light projecting out of the COMPUTER logo type. Intense light from above the distant vanishing point illuminates the scene.

Information International's COMp 80/2 Universal Pagesetter system produced half-tone negatives of the cover picture directly from the X-wing database. Normally, a cover photo or drawing is prepared for printing by a process called “separating.” This involves using an image-processing system to scan the hard copy and “separate” it into four half-tone negatives, one each for the three primary colors plus black. The negatives are then used to make press plates. Direct data base-to-negative processing, however, eliminates the intermediate steps of producing and scanning a hard-copy image.

Gary Demos and John Whitney, Jr., co-founded the Motion Picture Project four years ago with Information International. Demos is the project's director of advanced technologies and Whitney is its director of marketing and creative services. They feel the outlook is bright, as computer-based applications in entertainment continue to do well.

"Entertainment and technology are ready for each other," says Whitney. "The perfection of digital imaging could be as exciting as the development of film itself."

In talking about the project's progress and goals, Whitney notes, "By consistently improving our simulation skills we have made computer output appear real enough to suspend disbelief. You could say it's been like learning to see for the first time, except that our "eyes" are algorithmic models. There have been benchmarks along the way, like the X-wing—we are getting better, but there is much to learn. It is important to keep flexible, open to change, open to help—Hollywood's traditional special-effects methods are sophisticated."

"People ask 'So what's the value of digital scene simulation?' I think it may offer savings in some production schedules, but I see its value in terms of its creative impact. This technology is a new tool for solving difficult film production problems. It offers new possibilities for storytelling freedom. It is sensitive to the imagination. This creative freedom will challenge and excite the user and audience alike."

Gary Demos explains that the relationship between computing power and its cost will determine the feasibility of many entertainment applications. "The X-wing marks a new level for us; it shows that every year we're getting significantly more performance at lower cost. The astonishing rate at which computer advances are occurring, combined with heavily optimized software, will continue to improve our data handling ability and therefore our cost-effectiveness."

So how does one use this process to produce a finished piece of film? Demos explains, "Our production process begins with a storyboard prepared by an artist. Next we do action rehearsals using our computers as simulators. Then we adjust the shading and color in our images using Polaroid prints or a color video monitor. We next produce a movie file, which contains commands in Information International's Director's Language. This is a 'soft set'—the equivalent of a 'stage,' with 'sets,' 'cameramen,' and 'actors' for each scene. Finally we process this 'movie file' to produce finished color film. This 'soft set' approach has allowed us to move from 'object simulation' to what we now call 'event simulation.' It is exciting indeed!!"

letters to the editor

On algorithm design

Editor:

May I make a couple of comments on the interesting article "An Introduction to Algorithm Design," by J. L. Bentley (February 1979)?

On substring searching (p. 69): If a pattern $m$ long is run against an $n$ element string, the number of pattern matches is $n - m + 1$, because after that the pattern runs out of text. Furthermore, the worse case cannot be $m(n - m + 1)$, because it is impossible to have a variable string which does not mismatch sooner than $m$. The exceptions (2 cases)—a string all of one parity and a pattern all of the same parity except the last element.

On hashing (p. 68): As long as we are talking efficiency, a marker showing the last element, of several hashing to the same address, saves a lot of searching. In addition, since it is fruitless to try to fill a memory exactly, there are better ways to resolve collision than scanning: Use the memory lazily, and indicate exactly where to go for the next element.

Arnold I. Dumey

To be considered for publication, a letter to the editor must be accompanied by a statement giving Computer permission to publish that letter.