3D VIEW

STEREOGRAPHICS®

Your 3D Stereoscopic Resource

July 1997

MDK Stereo——Debut at CGDG '97

MDK, the futuristic, third person, shooter PC game from Shiny Entertainment, made its stereo debut at StereoGraphics' booth at this year's Computer Game Developer's Conference (CGDC) in Santa Clara, CA. While other booths had the fast-paced, action-packed game running in the game's standard mode, StereoGraphics had the only stereo-ready version at the show.

"The stereo effect is absolutely a perfect match for this game," said John Billip, a CGDC attendee. "The main character is jumping right off of the screen—and the bullets—they are whizzing right past you!"

Making a special appearance to view the hot-off-the-press stereo-version of MDK was David Perry, president of Shiny Entertainment. Making his way through the crowd of onlookers, Perry took a moment to play the stereo version, giving onlookers a first hand demonstration of what the game had to offer.

"We showed MDK running on StereoGraphics 3D glasses [SimulEyes] at the Computer Game Developers Conference, and we were really pleased with the results. We're now planning to develop full blown [stereo] upgrades to the game," said Perry in a recent post to his *Shiny Secret Projects* page on Shiny's website. The upgrades are available now via Shiny's website (www.shiny.com).

The buzz carried all the way over to the Microsoft booth. By the start of the second day of the show, Microsoft had two systems and three monitors running the stereo-version of MDK.

StereoGraphics presence at the CGDC would not have been as successful without the help of companies like Shiny Entertainment and Microsoft. We would like to take this opportunity to thank them for their continued support.

CONTEST!

With stereo-viewing of stills and .avi files on the Internet growing in popularity, we at StereoGraphics know that there are hundreds of people using SimulEyes on a daily basis to create "killer" stereo apps—either for professional or recreational web use. StereoGraphics is implementing a new, ongoing contest through 3DVIEW where we want to see your best stereo pictures (still or .avi animation) for use with our SimulEyes glasses.*

The contest is simple: Submit your entry by the allotted date, and StereoGraphics will send you the Java software tool *Symantec Café* if you are chosen as the "Best App of the Month" (BAM).

Criteria for the BAM

- Stereoscopic views exhibiting out-of-screen and into-screen parallax
- Still or .avi animation
- File types: BMPs, JPGs, or AVIs encapsulating BMPs or JPGs
- Submit files electronically to: develop@crystaleye.com

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CALENDAR OF EVENTS

Look for StereoGraphics products and/or exhibits at these upcoming trade shows:

SIGGRAPH	8/3-8/8	Los Angeles, CA
E3 Asia/Intermedia	8/13-8/16	Singapore
Multimedia '97	8/20-8/22	Arlington, VA

StereoGraphics would like to support you in your trade show efforts. If you are interested in exhibiting your stereo-ready software, please do not hesitate to contact us and we will provide you with SimulEyes or CrystalEyes for every workstation showing SimulEyes or CrystalEyes compatible applications.

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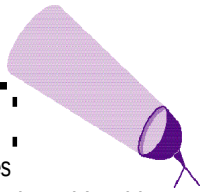
SPOTLIGHT:



Ab bott Laboratories

Abbott Laboratories, based in Abbott Park, IL, is a global, diversified health care company devoted to the discovery, development, manufacture and marketing of pharmaceutical, diagnostic, nutritional and hospital products. Its cadre of drug treatments, including those for HIV, has been heralded by medical professionals worldwide. Today, Abbott Labs is working on ABT378, its next-generation HIV treatment and the follow-up to the Norvir™ HIV protease inhibitor.

Abbott research scientists' race against time to develop these treatments was aided significantly by the ability to design drugs in a digital environment using StereoGraphics' CrystalEyes or Projector Z-Screen stereoscopic visualization systems.

"Using CrystalEyes and Z-Screen is the only way we can see a lot of information at once without it becoming confusing," said Charles Hutchins, associate research fellow with Abbott Labs. "We wouldn't work without it. Stereo viewing helps the design and production of better drugs faster."

Abbott describes their process as interactive, structure-based drug design. The process is carried out as follows:
Abbott researchers begin with a molecule that they believe will bind to a protein they are trying to affect. Crystals are grown from the protein and x-ray crystallography is used to determine the molecular structure of the protein. This structure is captured using highly sensitive CCD detectors and is converted to digital format.

Once protein and drug molecules are modeled, Abbott scientists can observe these molecules, see how they interact and determine how to make drug molecules more effective. What the scientists are looking for is a pocket in the protein molecule that isn't already occupied. They will use this pocket to dock a drug compound and a protein together and test the reaction.

"With CrystalEyes and Z-Screen, we can see where the molecule goes and can make rational choices about what to modify," said Hutchins.

However, these pockets are complex, and drug compounds must fit exactly for it to work. Hutchins describes this process as finding an odd-size glove and then designing the perfect hand to fit inside.

"Only by seeing it in stereo can we design the right hand to fit the glove," said Hutchins.

The new compound is then produced in a lab and tested for effectiveness. Then, more crystals are grown, x-ray crystallography is again conducted and new digital models are created for testing. Norvir is a key example of how using stereoscopic visualization as part of the interactive drug design process has major impact.

"We used the same process for ABT378 as for everything else," said Hutchins. "A follow-up compound can only be made if we see what can be done. We would have a much more difficult time without stereo."

CTO's Report

Hardware Interface Proposed

Since 1980, StereoGraphics has been the driving force behind the adoption of electronic stereoscopic displays. Our core products, CrystalEyes® eyewear and infrared emitters, are widely used for applications such as molecular modeling and MCAD. It is the interface of the hardware with a workstation that is the subject of my concern.

At present there are at least ten incompatible connector interfaces for stereoscopic hardware in the workstation community. There is also no cross-platform standard, and often there is no standard for a given manufacturer. This scenario will hinder the acceptance of stereoscopic displays, and your customers and ours are not served by this lack of standardization.

Recently StereoGraphics has been active in an industry-wide initiative to standardize the connector interface. We have been working with VESA to support a newly proposed standard addressing our concern. The proposed standard uses a 3-pin mini-DIN connector with 5 volts of dc on pin 1, ground on pin 2 and the stereo-sync signal on pin 3. This proposed standard is applicable to wireless and tethered shuttering eyewear.

If you would like a copy of the proposed VESA standard, send an e-mail to develop@crystaleye.com, along with your mailing address, and a copy will be sent to you. In the meantime, if you have questions or comments about the proposed VESA standard, please don't hesitate to contact a StereoGraphics developer representative.

Lenny Lipton
Founder, Chief Technical Officer

Notes from the DeveloperDen...

GLIDE Stereoscopic
Displa y Support
StereoGraphics is pleased to report that Alliance's AT3D chipset's page-flip capability for stereoscopic displays has been tested successfully. Now, this functionality is making its way into software drivers like GLIDE, the 3D interface driver licensed from 3DFX Interactive.

Developers should note that end-users may see the Alliance AT3D in two board configurations, one as stand-alone entry-level 3D accelerator, and the other with 3DFX VoodooRush accelerator daughter-card, piggy-backed on the Alliance PCI card.

In either configuration, the AT3D display controller can perform automatic stereo page-flipping, while its local 4Meg frame buffer supports quad buffering with remaining room for the Z buffer.

In order to make adding stereoscopic support as transparent as possible, StereoGraphics proposed using existing GLIDE APIs (reference v2.3), with additionally defined parameter enumerations. Assignment of previously undefined enumerations will insure maximum compatibility among run-time driver DLLs, regardless of underlying stereoscopic display hardware capabilities.

Because of GLIDES' vague resemblance to common OpenGL APIs, the additional stereo buffer enums are specified in similar OpenGL style.

For distinguishing a stereo-ready controller chipset like the Alliance AT3D, the program calls the grSstQueryHardware() API to confirm the presence of AT3D.

Summary of stereoscopic display additions:

1 grSstOpen() allows additional video mode values for "res" argument like "GR_RESOLUTION_640x480_STEREO", and "GR_RESOLUTION_640x240_STEREO" since AT3D controller can support scan line doubling output. grSstOpen() still uses "2" for "num_buffers" argument, as left/right components are treated as part of same frame buffer.

2 grRenderBuffer() allows additional buffer designation values like "GR_BUFFER_FRONT_LEFT", "GR_BUFFER_FRONT_RIGHT", "GR_BUFFER_BACK_LEFT", "GR_BUFFER_BACK_RIGHT". For sake of compatibility with OpenGL buffer designations, "GR_BUFFER_LEFT" and "GR_BUFFER_RIGHT" could also be added for cases of front/back clears.

3 grBufferSwap() need not change, just like in OpenGL. Stereo display mode presumes left and right back buffers will be updated at same time.

Look for stereo-ready versions of GLIDE for AT3D from Alliance (www.alsc.com) and for AT3D/VoodooRush from 3DFX Interactive.(www.3dfx.com)

StereoGraphics Leads
Stereo Direct X Effort
StereoGraphics has been working closely with Microsoft and leading hardware and software developers to deliver a DirectDraw driver to support the stereo flip API. The availability of this stereo 3D API will make stereo 3D-compatible games under Windows 95 widely available to the PC game player. Furthermore, a Microsoft-endorsed implementation will become part of the DirectX SDK and be available to all game developers.

Under the stereo 3D implementation, as originally envisioned by Microsoft, a developer would be required to support stereos using two separately managed primary surfaces. A cleaner and more efficient implementation is obtained by using a single primary surface that automatically flips between two surfaces in the same back buffer chain. The result is to have a FlipStereo() API to complement the existing Flip() API. APIs that implement paired stereo buffers include OpenGL, Speedy 3D from Rendition, and now GLIDE. The StereoGraphics developer kit, which provides DOS-protected mode stereo drivers for DOS/4GW games, implements this scheme as well.

The implementation proposed by StereoGraphics was demonstrated at the Computer Game Developer's Conference in Santa Clara, CA, during the month of April. Leading 3D hardware developers such as Alliance Semiconductor and Rendition have participated in the development and testing of this driver.

StereoGraphics will be working closely with Microsoft on the inclusion of this stereo API as a reference in the next release of the DirectX SDK. Developers interested in participating in the testing of this driver should contact the StereoGraphics developer relations group at develop@crystaleye.com. An example of this driver is available at ftp.stereographics.com/developers/d3dflysvr.zip.

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Contact StereoGraphics

Questions or comments? Please use the e-mail aliases below to contact us.

DEVELOPER PROGRAM
develop@crystaleye.com

SIMUL EYES SUPPORT
SE-Supt@crystaleye.com

CRYSTAL EYES SUPPORT
CE-Supt@crystaleye.com

WEB MASTER
web-mast@crystaleye.com

CRYSTAL EYES SALES
CE-Sales@crystaleye.com

SIMUL EYES SALES
SE-Sales@crystaleye.com

VIDEO SALES
video@crystaleye.com

OEM/BUSINESS DEVELOPMENT
OEM@crystaleye.com

PUBLIC RELATIONS
PR@crystaleye.com

PRODUCT INFORMATION REQUESTS
Requests@crystaleye.com

Or contact us:

Tel: 415-459-4500
Fax: 415-459-2142
www.stereographics.com

StereoGraphics Corporation
2171 East Francisco Boulevard
San Rafael, CA 94901
USA

Attention! *3DVIEW is now available electronically—email develop@crystaleye.com to be added to the mailing list.*

DEVELOPER'S DEN

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CrystalEyes SDK
The updated version of the CrystalEyes Software Development Kit has been uploaded to the developer page of our website:
www.stereographics.com/html/developers.html

Additions to the SDK include:

- OpenGL example application for Diamond Multimedia Systems' FireGL 4000 Graphics Board in the Windows NT development chapter
- XGL example application, including a pair of sample stereo images, in the SUN development chapter

StereoGraphics would like to acknowledge the following people for their contributions to the CrystalEyes SDK: Harvey Ziegler and John Stevens at Hewlett-Packard, Michael Adams at Digital Equipment Corporation, Craig Winter and Maggie Bourget at EDS Unigraphics, John Schimpf at Silicon Graphics, Dave Milici and Lenny Lipton at StereoGraphics, Bob Akka at Chasm Graphics,Andy Woolf and Carsten R. at Diamond Multimedia Systems, and Geoff Hennessey at PCI Incorporated.

CONTEST!

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· Deadline for submission: August 1, 1997

The contest winner will also be spotlighted in the September issue of 3DVIEW as well as having their images uploaded onto StereoGraphics' website.

*If you do not have our web viewer driver, it is located under the file name (SIMWEB3D.ZIP) at our ftp site: ftp.stereographics.com\developers. For questions on implementing the stereo 3D-compatible apps with webviewer, or on this month's contest, please email develop@crystaleyes.com.