Software

Art from Photos
Gertrudis Graphics’ GMX-PhotoPainter is a stand-alone Mac and Windows program that transforms an image (such as a photo) into an original artwork (see Figure 1). Users can start with an existing picture, such as from a digital camera or scanner, or a 3D rendering or painting from another program or imaging application. GMX-PhotoPainter performs a topological analysis of the image’s content and builds a matrix of flow direction vectors. Users can then paint a few quick strokes across the desired features of the image. The program uses this information to generate what looks like hand-drawn art.

The product includes several standard, ready-to-use styles that imitate traditional media: watercolor, oil painting, crayon, and pen and ink. Users can also create their own styles, customizing the brush shape, texture, color-sampling technique, and other features. There are more than 40 different parameters, ranging from common ones such as width, length, and transparency to more sophisticated ones such as color variation and pen and ink behavior. GMX-PhotoPainter has been re-written in highly optimized C++, which Gertrudis Graphics claims produces a natural response to the painting operations in real time.

For more information, visit www.gertrudisgraphics.com.

Automating 3D CAD Data
Anark Core 3.2 lets users create animated manufacturing work instructions and interactive electronic technical manuals in PDF format. The product is now available for 32-bit and 64-bit systems running Windows XP, Windows Vista, and Windows 7. It also includes features for creating lightweight visualization geometry from 3D CAD assemblies for downstream use.

Besides letting users extract, combine, and publish data locked in Excel spreadsheets and in product-data-management, enterprise-resource-planning, and other databases, Anark Core 3.2 provides an engineering animation system for manufacturing engineers and technicians. According to Anark, Anark Core has a nondestructive workflow that memorizes every step required to author a 3D PDF in an
Anark Core “recipe.” Product information can be automatically reincorporated every time a significant change occurs, ensuring that users and partners are working with up-to-date documents, while requiring minimal rework, claims the company.

For more information, visit www.anark.com.

**Photorealistic Lighting Rendering**

Alibre Design Expert and Professional 3D CAD software now come with Luxion KeyShot 2 photorealistic lighting-rendering technology, which gives users 3D modeling and 2D drafting technology with realistic lighting visualization. KeyShot 2 is built on Luxion’s real-time interactive ray-tracing lighting and global-illumination technology. It can create photographic images from 3D models, letting users with 3D data create a photographic image in a matter of seconds, regardless of the digital model’s size, says Alibre. KeyShot 2 delivers real-time “shorts” without needing special graphics cards. Alibre Design Expert and Professional also offer the new BIP export format specifically designed for KeyShot 2. In addition, they can export 3D data directly into Luxion’s native format.

Alibre has also released Alibre Design 2011 for digitally prototyping 3D models. New features include a full port of Alibre’s code to C++, making it the first native 64-bit version—important for users who want to create large, complex designs, says the company. Other new features include the ability to convert a solid part into sheet metal, virtual intersection dimensioning, an on-demand framework for detailing drawings, automatic part reorientation improvements, new hole presets, multiplane creation, and keyboard shortcuts.

For more information, visit www.alibre.com.

**Photographic Images from 3D Data**

Bunkspeed’s Shot rendering software leverages the power of Nvidia GPUs and is built on Nvidia’s CUDA (Compute Unified Device Architecture) to accelerate the user’s workflow, according to the company. Users can scale up rendering over multiple Nvidia GPUs or machines. Even the most complex scenes render interactively and in real time, says Bunkspeed.

Shot incorporates mental images’ iray technology to provide interactive, 3D rendering. According to Bunkspeed, Shot provides photorealistic accuracy, and users can intuitively create the highest-quality image output without the steep learning curves that other rendering products require.

For more information, visit www.bunkspeed.com/SHOT.

**Enabling Multiprojector Displays**

ScalableDesktop automatically blends and warps arrays of projectors to display seamless Windows 7 desktops. Supporting up to six projectors, ScalableDesktop enables most standard Windows desktop applications to be viewed as an ultra-high-resolution display, without external hardware. Scalable Display Technologies claims that ScalableDesktop is ideal for such applications as conference rooms, lecture halls, touch walls, widescreen gaming, and commercial and military simulation environments.

For more information, visit www.scalabledisplay.com.

**Hardware**

**Volumetric Imaging System**

3D Icon is developing the CSpace Volumetric Imaging System, which will disperse nanomaterials throughout a clear volumetric image space. The system will direct invisible laser beams into the image space, exciting the nanomaterials to emit visible light and thus display a full-color 3D image.

R&D for the system comprises the following:

- Synthesis of nanomaterials for red, green, and blue.
- Synthesis of the image space. For creating a host matrix embedded with nanomaterials, this involves dispersing them evenly within the host material (a polymer or an aerogel).
- Development of electronics and control systems. For laser projection systems, this includes developing control software, specialized graphics-engineering techniques, and image-rendering algorithms.
- Photonics and optical engineering. For image delivery and corrections, this involves specialized lens arrangements and color spectrum manipulation.

3D Icon says this technology is best suited in scanning applications for medicine, CAD/CAM, and architecture; security applications involving scanning; entertainment and gaming applications; geospatial applications for weather mapping and oil and gas exploration; and 3D imaging-based control and navigation for military, air traffic control, and urban planning.

For more information, visit www.3dicon.net/technology/cspace.

Selected CS articles and columns are also available for free at http://ComputingNow.computer.org.