From the Editor

Snapshots of the State of the Field

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It’s my pleasure to introduce this nontheme issue, which includes submissions selected by Associate Editor in Chief Miguel Encarnação as well as our regular department articles. I encourage you to continue submitting high-quality papers such as these for publication in CG&A!

The first nontheme article, “Using Virtual Reality to Analyze Sports Performance,” shows how Benoit Bideau and his colleagues employ interactive, immersive VR to overcome video playback limitations to improve understanding of sports performance. Unlike video playback, their approach allows in-depth analysis of athletes’ perception-action loop.

“Ringing: Frugal Subdivision of Curves and Surfaces,” by Jarek Rossignac and Abhishek Venkatesh, describes how to use ringing to reduce the working memory needed to render subdivision curves, surfaces, and animations. Ringing is the name of a new recursive subdivision scheme introduced in this article. The authors have implemented ringing on both CPUs and GPUs.

In “Polygon-Based Fractals from Compressed Iterated Function Systems,” Philip Van Loocke presents a method to generate fractal textures for regular polygons. His method lets you create such forms as fractal flakes and spirals. It employs a new version of recurrent iterated function systems called sth-order restriction.

“Learning Blood Management in Orthopedic Surgery through Gameplay” discusses a serious game Jing Qin and his colleagues developed to teach future surgeons blood-management skills. The game teaches surgeons to avoid or manage bleeding by combining advanced graphics technologies with game elements such as rewards and punishments, collaborative playing, and a haptic interface.

In “Creating an Immersive Game World with Evolutionary Fuzzy Cognitive Maps,” Yundong Cai and his colleagues introduce the Evolutionary Fuzzy Cognitive Map, which models fuzzy and probabilistic causal relationships. This lets developers create a more dynamic and realistic game world, with believable scenarios and characters.

“The Wiimote and Beyond: Spatially Convenient Devices for 3D User Interfaces,” by Chadwick Wingrave and his colleagues, is a tutorial on using the Wii Remote (Wiimote) in 3D user interfaces. They believe that the Wiimote is just the first step on the way to 3D interfaces that are inexpensive, robust, flexible, and ubiquitous. They describe the Wiimote’s strengths and how to compensate for its limitations, and compare it with other similar devices.

In the Visualization Viewpoints department, “Integrating Visualization and Interaction Research to Improve Scientific Workflows,” Daniel Keefe presents four examples of integration between visualization and interaction research: 3D selec-

New Publishing Models

The publishing world is changing fast, and CG&A isn’t immune to these changes. Electronic publishing and distribution of publications through the Internet is quickly growing, whereas traditional paper-based publishing and distribution seem to be shrinking. A variety of devices to read electronic documents are available, and even more are introduced each year. These devices come in various resolutions, dimensions, and form factors. In particular, the popularity of smart phones and electronic book readers is expected to quickly increase. Automatic reformatting of documents originally formatted for paper is still challenging. No single solution seems to fit all the devices. CG&A articles are particularly challenging because of the high-quality graphics content. I’m interested in your opinion about these issues. Would you consider reading CG&A on any of these devices? I’d also like your advice. What technologies are available to address the problems associated with the transition? Feel free to email me directly at cgaenic@computer.org.

From the Editor

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tion in brain visualizations, interactive scientific visualizations, pen- and touch-based interfaces, and modeling human performance in interactive visualization-related tasks. For visualization tools to have a greater impact on scientific workflows, researchers must improve these tools’ accuracy, find ways to link multiple visualization strategies, and make data analysis more fluid.

Finally, in the Graphically Speaking department, “Toward Natural Selection in Virtual Reality,” Andre Sherstyuk and his colleagues propose several steps to speed up the merger of game engines, networking, and VR technology so that players can have realistic shared experiences in persistent virtual worlds. One of the key concepts is that the more advanced players receive increased access to VR games, thus controlling the demand for potentially limited computational and hardware resources. The authors give several examples of what such games might look like and discuss the games’ potential social impact.

I hope you enjoy this issue, whether in paper or digital format. The May/June issue will be a special issue on ultrascale visualization. We usually plan special issues 12 months ahead. So, if you would like to propose one, please email me or Associate Editor in Chief Holly Rushmeier at cgaeic@computer.org. The board will then discuss your ideas at its next meeting. I’ll continue to communicate with you through this column in future issues; I’d appreciate your comments.

Corrections

I n the IEEE Digital Library information for “CoCoNutTrx: Collaborative Retrofitting for Information Visualization” (Sept./Oct. 2009, pp. 58–68), the author order was incorrect. The correct order should be Isenberg, P.; Bezerianos, A.; Henry, N.; Carpendale, S.; and Fekete, J.-D.


We apologize for these errors.

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