A New Era of Performance Evaluation

pp. 23-30

Sean M. Pieper, JoAnn M. Paul, and Michael J. Schulte

Computers increasingly interact with humans, the physical world, and each other—often simultaneously. Overall performance in this context is a function not only of individual applications, but also of their interactions as they contend for both internal and external resources.

Researchers must describe modern computer usage in terms of scenarios consisting of numerous I/O streams, timing information, and parallel tasks that enter and leave the system, rather than in terms of programs executing in isolation from the physical world and each other. Such use represents a new style of computing, which the authors call *scenario-oriented* to contrast it with other well-established computing styles such as general-purpose and application-specific.

Magic Paper: Sketch-Understanding Research

pp. 34-41

Randall Davis

Sketching is ubiquitous: We draw as a way of thinking, solving problems, and communicating in a wide variety of fields, for both design and analysis.

Unfortunately in today's technology, sketches are dead—they're either graphite on slices of dead trees, or, if captured on a PDA or tablet computer, simply pixels of digitized ink. The Sketch Understanding Group at MIT has been working toward a kind of "magic paper"—that is, a surface that's as natural and easy to draw on as paper, yet that understands what you draw.

Ink, Improvisation, and Interactive Engagement: Learning with Tablets

pp. 42-48

Jeremy Roschelle, Deborah Tatar, S. Raj Chaudhury, Yannis Dimitriadis, Charles Patton, and Chris DiGiano

Socrates' pedagogical use of an early learning technology—improvising an informal sketch in the sand—demonstrates why today's teachers might prefer Tablet PCs over desktop or laptop computers to structure interactive, engaging learning experiences.

Given the central role of teaching practice in learning outcomes, advances in the use of tablets in education will be driven not primarily by technology features but rather by instructional models that reflective educators develop and share with their peers. Communities that form around platforms such as Classroom Presenter and the authors' own Group Scribbles should provide an excellent forum for such advances.

Handwriting Recognition: Tablet PC Text Input

pp. 50-55

James A. Pittman

In specific situations, machine-recognized handwriting serves as a useful alternative for entering small volumes of text. However, practical handwriting recognition isn't easy. Not only must handwriting-recognition systems handle many different shapes and styles for each letter, but humans also commonly produce sloppy script to increase throughput speed.

To support a wide range of writing styles and poorly formed cursive script, the Tablet PC input panel uses a time-delay neural network working with a lexicon. High-end versions of Microsoft's Vista now include Tablet PC software, with an improved handwriting recognizer that supports both personalization and error reporting.

Classroom Presenter: Enhancing Interactive Education with Digital Ink

pp. 56-61

Richard Anderson, Ruth Anderson, Peter Davis, Natalie Linnell, Craig Prince, Valentin Razmov, and Fred Videon

Networked Tablet PCs can be used for a wide range of classroom applications including note taking, interaction with presentation materials, simulations, in-class communication, and accessing outside resources.

The authors have developed Classroom Presenter, a distributed Table PC-based system that supports the sharing of digital ink on electronic slides among instructor, students, and public displays to explore a set of classroom interaction scenarios for enhancing student engagement in class. Initial deployments of the system show that instructors can exploit this technology not only to achieve a wide range of educational goals successfully but also to create a more participatory and collaborative environment.

Facilitating Pedagogical Practices through a Large-Scale Tablet PC Deployment

pp. 62-68

Joseph G. Tront

In the fall of 2006, the Virginia Tech College of Engineering became the first public college of engineering to require all incoming students to own a Tablet PC. The college has developed an implementation process for using the devices that includes computer acquisition, faculty training, infrastructure modifications, and multiple assessments for program evaluation. Initial results of this groundbreaking program are positive, showing measurable improvements in pedagogical practices that are ultimately expected to lead to learning improvements.

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