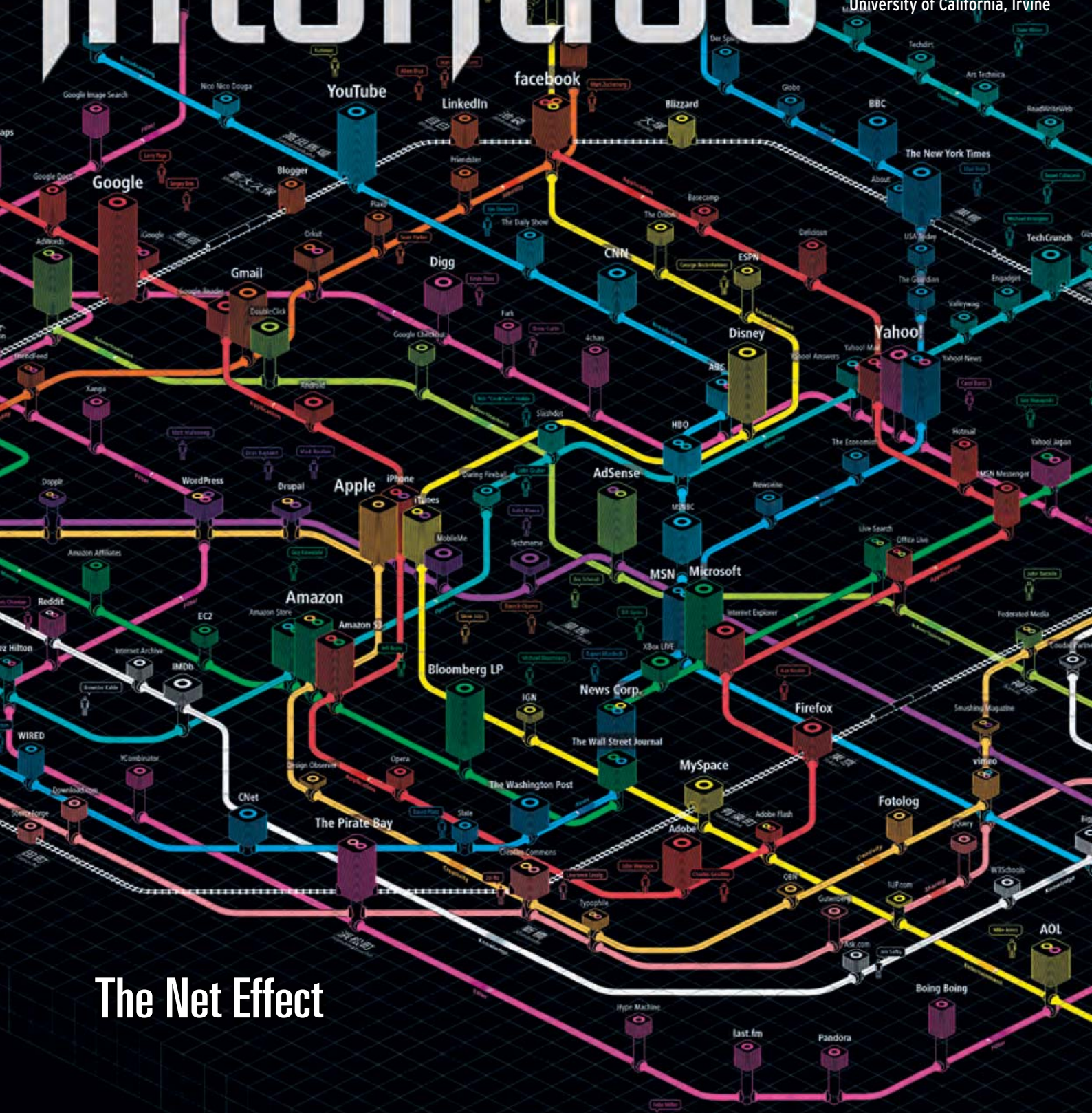


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As computing evolves, researchers respond to burgeoning network demands

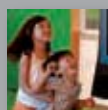
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On the cover:

A portion of Web Trend Map 4, which plots the Internet's leading names and domains onto the Tokyo Metro System. The entire map, completed in April 2009, can be found at <http://informationarchitects.jp/web-trend-map-4-final-beta>.

It's all in Z-DANCE

by Shellie Nazarenus

*You put your right foot in,
you put your right foot out.
You put your right foot in
and you shake it all about.*

The Hokey Pokey, with its whimsical cadence and simple movements, beckons even the most reluctant would-be dancers to join in the fun.

While the joys of participatory performance haven't changed, the medium has been transformed. Technology research in Calit2's eMedia Studio has given birth to an interactive exhibit at a children's museum.

By integrating tools such as processed video, computer-generated animation, motion capture and real-time motion tracking, the Z-Dance exhibit gives users a multi-dimensional experience that's light-years removed from other participation approaches.

First Step Forward

Zeum: San Francisco's Children's Museum commissioned John Crawford, UCI dance and media arts associate professor, to develop Z-Dance. Prototyping began last fall after Crawford's earlier Dance-IT work caught the eye of a Zeum board member. That project, developed with the San Francisco Ballet, featured

a kiosk where people could step inside, select a pre-recorded dance style and learn from an instructor.

The goal for Z-Dance is far more experiential.

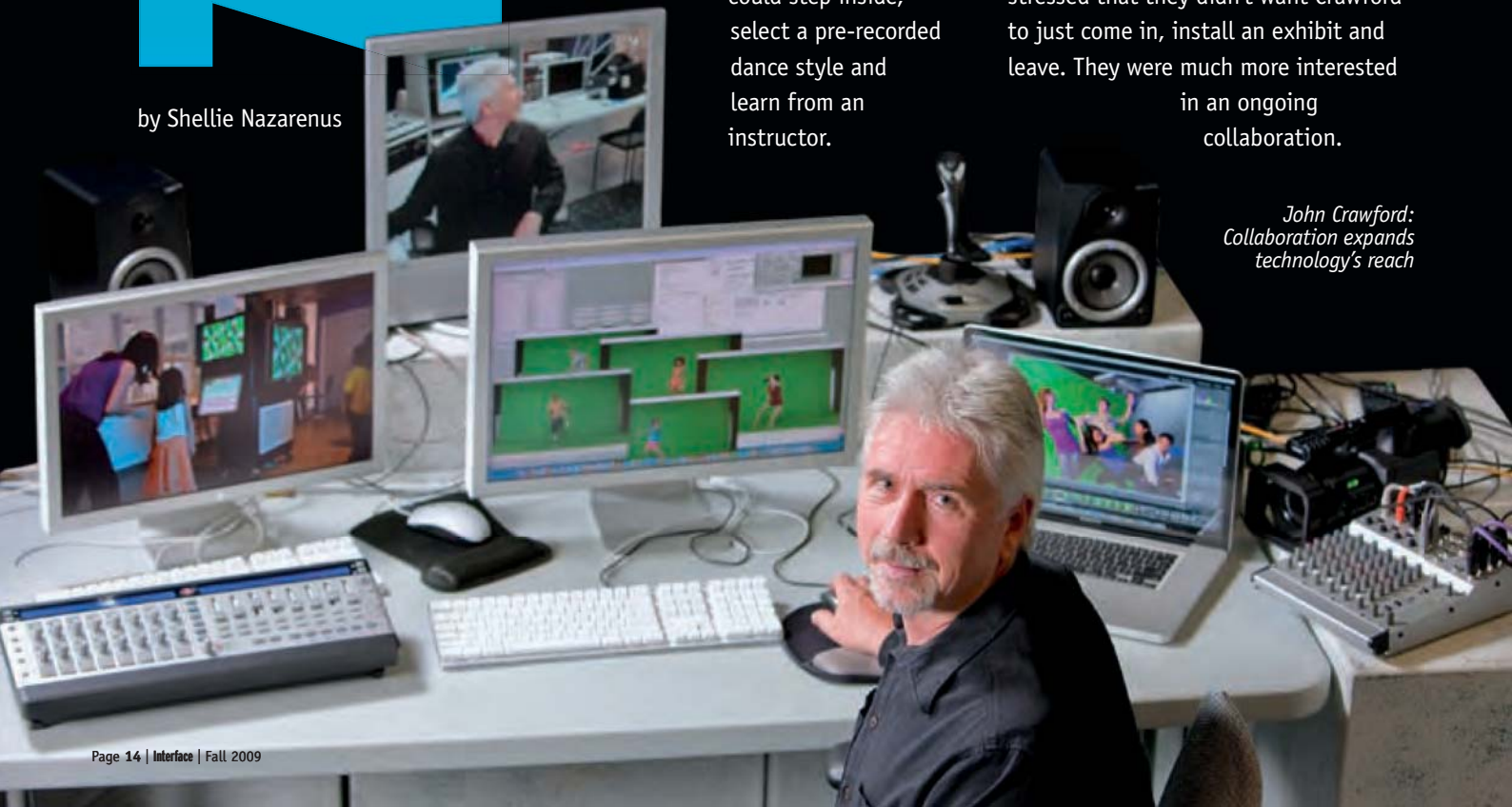
"It's really about bringing kids out of their shells and enabling them to explore movement," says Mike Lai, Zeum exhibits manager. "We really wanted to add a performance dance-type element to our exhibits that lowered the stage fright barrier."

Lai has been working closely with Crawford to develop and refine the Z-Dance experience based on feedback from Zeum guests. Since the museum opened in 1998, millions of visitors have come for the hands-on, multimedia arts and technology opportunities.

"We are not your typical children's museum," explains Audrey Yamamoto, Zeum's executive director. "We're focused on kids creating things that they never thought were possible, and technology is the tool we provide for them to be creative, collaborate and communicate."

The underlying technology for Z-Dance derives from the Active Space system Crawford created more than a decade ago. Zeum staff, however, stressed that they didn't want Crawford to just come in, install an exhibit and leave. They were much more interested in an ongoing collaboration.

*John Crawford:
Collaboration expands
technology's reach*



“It’s a really great fit with what we are trying to do at Calit2, which is to find ways to expand the capabilities of our technology without replicating a proven concept,” says Crawford. “After all, you might say that research is what we do when we don’t know what we’re doing.”

Feeling the Effects

Z-Dance development blossomed in several phases.

First, Crawford helped the museum design and equip the dedicated space where the exhibit resides. Lighting and hardware were refined and an easy-to-use touchscreen interface was developed.

Initially, there were four music tracks and four special effects from which participants could choose. That selection doubled in the second prototype, offering more capability and a streamlined user experience. Icons on the touchscreen were developed to serve as visual cues that activate the system, allowing even the youngest participants to navigate easily.

“At first, my reservation was how intuitive the system was going to be. That’s always the challenge in building exhibits for children, and this one is amazingly easy to use,” says Lai.

Visitors entering the Z-Dance room are greeted by a continuous montage of video clips that the system has recorded of others’ experimentations. The collective memory comes to life on a large display screen, drawing families into the space.

A green-screen wall is the exhibit’s backdrop, while its technology backbone consists of a 3x4-ft. kiosk, where users pick music and visual effects that range from echo trails to a kaleidoscope-like pattern to an etch-a-sketch experience. As they begin to



move in the space, the system responds.

“There really is a connection between the effects and what you’re doing with your body,” Crawford explains.


Positive Feedback

Joy Wong-Daniels, Zeum’s marketing and public relations manager, is amazed by the multi-generational collaboration the exhibit is inspiring. “They don’t have to figure out how to make the technology work, but rather how to be as creative [as possible] with their movements to make the most out of the sounds, effects and colors.”

In the prototype’s final version, the amount of movement changes the way the song sounds. For example, when there is little motion users may hear only the drum track. With more movement comes the rhythm guitar, and all-out enthusiastic participation is rewarded with the sounds of vocals and lead guitar.

“Yes, we are a children’s museum, but when we see adults having fun that’s when we know we’ve successfully created a collaborative, friendly experience,” Lai contends.

Developers plan to grow the project in round two. Zeum and Calit2 hope to find funding opportunities to network multiple locations so that the experience spans time and space.

“The Zeum folks keep telling me that it’s the hottest exhibit they have and how excited they are about the visitor response,” says an enthusiastic Crawford. “We would love to find ways to expand it!” 

The Z-Dance Experience

“All of the performances are unique and they don’t take much thought. They’re easy for a 7-year-old — even the design and creativity.”

—Valerie, parent, age 44, Chicago, IL

“I feel good because it makes me feel jumpy and it makes me feel less shy.”

—Dwijen, age 5-1/2, Sunnyvale, CA

“Awesome! Amazing! Because you can see yourself while you do it and it’s something you don’t have at home.”

—Bali, age 37, Great Neck, NY

“It looks cool because my brain thinks it looks cool!”

—Kevin, age 10, South Bay, CA

“It’s a huge hit with my kid! I can’t get him to leave. He has been here before and it was the first thing he wanted to do when he came in!”

—Parent of Ethan, age 3, Chicago, IL

“Z-Dance makes me feel energetic and graceful!”

—Stina, age 13, San Carlos, CA

“I have never seen this before. We really like it...nice to have so many controls. Loved mirror effect and music.”

—Shari, age 65, Burlingame, CA