Computational Thinking Meets Design Thinking: Technology and Arts Collaborations

[Gala Speaker]

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ABSTRACT

Are fine arts and technology compatible partners? Do these disciplines support each other or flinch when they are combined like oil and water? Do collaborative efforts provide interesting insights and opportunities for students? For practitioners? There seems to be an explosion of interest in exploring arts and technology connections: new media, digital media, kinetic art, new frontiers, emergent media, interdisciplinary, multidisciplinary, and transdisciplinary are only some of the terms used to describe this fusion of disciplines.

A visit to the SIGGRAPH art gallery or the SIGCHI Interactivity sessions, for example, will showcase a wide variety of uses of computing, embedded control, sensors, and actuators in the service of art. Kinetic art using embedded control is a marriage of art and technology. Artistic sensibility and creativity are required for concept and planning, and computer science and engineering skills are required to realize the artistic vision. However, these different skills are often taught in extremely different parts of a university campus.

In this talk I will start with some thoughts on the nature of combining arts and technology, and show some historical and contemporary examples specifically relating to kinetic art. I will then describe an ongoing collaborative course that involves Computer Science and Art students working together to design and create computer-controlled kinetic art. Students in the course explore interfacing of embedded computer systems with sensors and actuators of all sorts. They also explore physical and conceptual aspects of machine-making as a fine-art sculpture process. Our goal is to enhance the educational experience of both groups of students. We believe that both student groups gain significant and unusual benefits that they can apply in a variety of ways in their respective disciplines.

Categories and Subject Descriptors

A.0 [**General Literature**]: GENERAL—*Conference proceedings*

General Terms

Dinner Speaker

BIOGRAPHY

Erik Brunvand is an Associate Professor in the School of Computing at the University of Utah in Salt Lake City, Utah. His research and teaching interests include the design of application-specific computers, graphics processors, ray tracing hardware and software, asynchronous and self-timed systems, and VLSI. He and his students are currently designing a many-core computer architecture targeted at real-time graphics rendering using ray tracing.

In 2009 he co-developed and taught an arts/tech collaborative course with a colleague in the Department of Art and Art History at the University of Utah entitled Embedded Systems and Kinetic Art that is now in its sixth offering this spring. This course puts computer science and art students into teams to design and build collaborative computer-controlled kinetic artworks. He has also spent time as a visiting scholar in the Digital and Experimental Media Arts (DXARTS) program at the University of Washington (2012).

This interest in arts/tech collaborations has led him to explore a variety of kinetic mixed media art pieces, many involving electronic control. His work has shown in venues such as the SIGGRAPH Art Gallery, the Kimball Art Center, the National Screenprint Biennial, and the Utah Museum of Contemporary Art. He is also a printmaker, and co-founder of Saltgrass Printmakers, a nonprofit printmaking studio and gallery in Salt Lake City since 2004.