Abstractions and Frameworks for Multi-Surface, Multi-Touch Applications

Bjoern Hartmann
Assistant Professor, Computer Science Division
University of California, Berkeley

Abstract: As multi-touch and multi-display hardware become pervasive, the need for tools and abstractions that help developers leverage such hardware becomes more pressing. I will present work on two recent research systems that investigate complementary approaches for aiding user interface programmers.

Proton is a novel framework that addresses helps developers write robust, maintainable gesture recognition code. Using Proton, the application developer declaratively specifies each gesture as a regular expression over a stream of touch events. Proton statically analyzes the set of gestures to report conflicts, and it automatically creates gesture recognizers for the entire set. To simplify the creation of complex multitouch gestures, Proton introduces gesture tablature, a graphical notation that concisely describes the sequencing of multiple interleaved touch actions over time.

HydraScope investigates how to adapt existing applications to run on multi-surface environments without access to the applications' source code. We introduce the concept of meta-application and illustrate it with a framework for creating meta-applications from existing web applications. Our approach consists of executing multiple copies of one or several applications in parallel, keeping the copies synchronized, and providing a multi-user input layer to interact with the meta-application.