Testing Surface Applications the LEET Way

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While the development of applications for tablets and digital tabletops has recently become a subject of significant interest, few tools exist to help with automated testing of these applications. This means that developers can end up struggling to create surface-based tests by hand or struggling to make use of tools that aren’t optimal for testing this sort of application. In such a situation, developers may simply forgo automated testing altogether at the user interface level.

LEET (LEET Enhances Exploratory Testing) is a tool for creating automated GUI tests of desktop, surface, and web applications. It works by recording a script of automatable events raised during a user’s interactions with an application. This script is compiled into C# code which can be executed to replay this sequence of interactions. Since this test is compatible with Visual Studio’s testing framework, it can be included as part of an automated regression suite.

LEET is based on the Windows Automation API, which serves as an interface between test code and elements of a GUI. Because of this interface, the GUI that LEET is testing can change without breaking tests unnecessarily as long as the sequence of actions to use a feature remains the same.

Future work will enable recording and testing of custom interactions to support testing of novel user interaction techniques. This will enable better testing of applications where user interaction is difficult to express using traditional interactions – such as with natural user interfaces.

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Multi-display environments (MDEs) connect several displays into a single digital workspace. One of the main problems to be solved in an MDE’s design is how to enable movement of objects from one display to another. When the real-world space between displays is modeled as part of the workspace (i.e., Mouse Ether), it becomes difficult for users to keep track of their cursors during a transition between displays.

To address this problem, we developed the Ubiquitous Cursor system, which uses a projector and a hemispherical mirror to completely cover the interior of a room with usable low-resolution pixels. Ubiquitous Cursor allows us to provide direct feedback about the location of the cursor between displays.

To assess the effectiveness of this direct-feedback approach, we carried out a study that compared Ubiquitous Cursor with two other standard approaches: Halos, which provide indirect feedback about the cursor’s location; and Stitching, which warps the display movement, and adds to our understanding of the principles underlying targeting performance in MDEs.

This work will appear at the Graphics Interface 2011 Conference in St. John’s, Newfoundland from May 25 to May 27 where it will be presented the Michael A.J. Sweeney award.