

Abstract

Single Display Groupware (SDG) solutions have been used to create software for disadvantaged children, particularly in the developing world. SDG allows for greater utilization of the limited infrastructure available to these kids. However, SDG has faces challenges in working with legacy applications. Our technology, called metamouse, takes a step toward an integrated multi-user application by allowing users to collaborate within unmodified legacy educational software.

Figure 1:
The metacursor in the “red” position

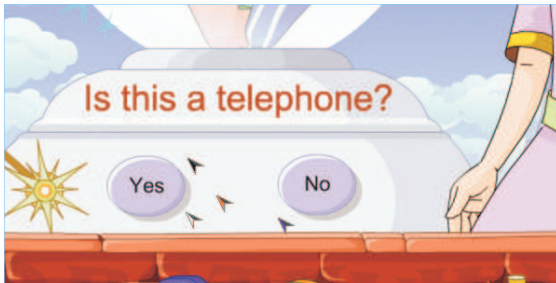
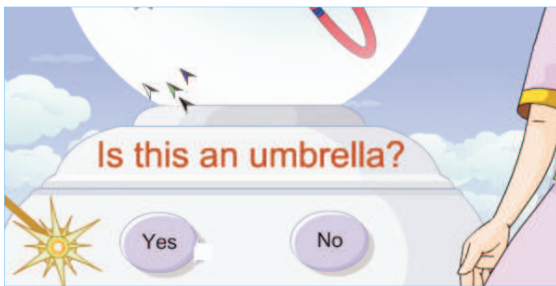


Figure 2:
The metacursor in the “green” position



Mapping Movement

First, we create a *metacursor* or *metamouse*, which is the average of all other cursor locations.

This *metacursor* is how input is passed to the application.

Mapping Clicks

We designed a mechanism to map many user clicks down to one. We determine when the user cursors are in agreement, and only pass user actions to the application when they are.

Figure 1 demonstrates when they are not in agreement. This is known because the distances between the mice is beyond some threshold. We indicate this to the user by coloring the metacursor red.

Figure 2 is an example of the mice being in agreement. The metacursor is green to indicate this to the user. In this case, the input is passed to the application through the metacursor.



Deployment

We conducted an exploratory qualitative user study of the software in a school near Bangalore, India.

We found the following:

- Metamouse allowed for the use of unmodified legacy educational games
- Metamouse is intuitive. Users with little experience using computers were able to use it quickly and correctly.
- Metamouse encouraged collaboration among users.

Future Work

- Interface with native windowing system to select appropriate schemes
- Multiplex other interface technologies, such as keyboards
- Systematic study of the value of this technology
 - VS naive SDG techniques
 - VS single mouse interface

- Implementing other schemes:
 - Drag-and-drop
 - Moving Targets
 - Highlighting
 - Contextual Menus
- Generate exhaustive list of influential supported applications