

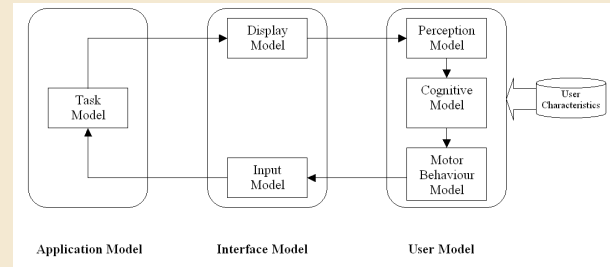
Simulating HCI for Special Needs

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Designing and evaluating human-computer interfaces for physically challenged users is difficult. The range of disabilities is very diverse and user trials are rarely representative. We have developed a simulator to help with the evaluation of assistive interfaces. It can predict the likely interaction patterns when undertaking a task using a variety of input devices, and estimate the time to complete the task in the presence of different disabilities.



Architecture of the simulator

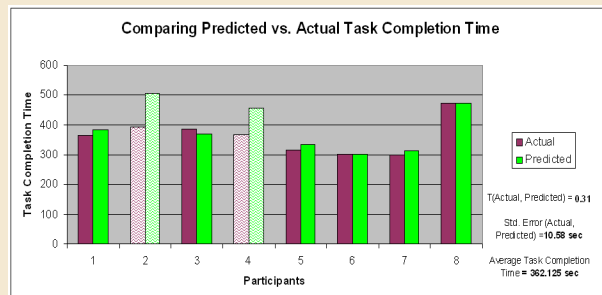
Architecture

Statistical models of users, interfaces and applications. We have modelled

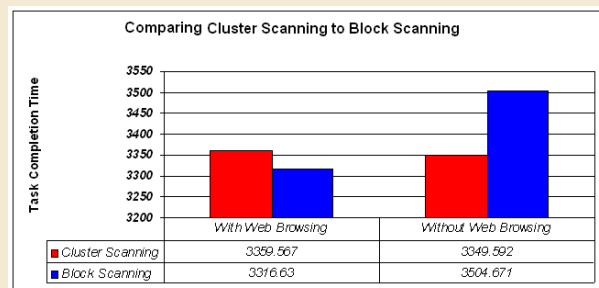
- User:** by components reflecting MHP
- Interface:** by theories of attention
- Application:** by recording standard interactions

Results

Currently, we have developed the underlying models for different scanning systems and evaluated them by logging interactions on some real life tasks. Scanning is an accessibility technique used by motor-impaired users for successively highlighting items on a computer screen and pressing a switch when the desired item is highlighted. We have calibrated the simulator and used it to evaluate a **new scanning technique based on clustering screen objects**. We are now designing an experiment with disabled users that will be used to develop and validate different components of the simulator.



Testing the simulator models



Using the simulator to evaluate a new interaction technique



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