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Information Delivery Newsletter

June 2006

As expected, we have spent a significant amount of time working on evaluation this year. This has included not only end-user evaluations (see "Do tailored documents make a difference") but also work on defining a broader framework for the evaluation of adaptive hypertext (or natural language generation) systems (see "Towards a comprehensive framework for the evaluation of adaptive systems).

2006 has been an exciting year so far: The 2006 International Conference on Intelligent User Interfaces (IUI 2006) took place in Sydney Jan 29-Feb 1, 2006, and we are now about to host COLING/ACL 2006 and the International Natural Language Conference (INLG 2006). We had a few visitors (e.g., Dr Candace Sidner, MERL, USA) and more students joining us for a couple of months (Yann Driutti, from France, Marc Hermann, from Switzerland, and Gail Sinclair, from Edinburgh, Scotland). Finally, we successfully demonstrated SciFly at CeBit. SciFly is a system that produces tailored brochures about work in the CSIRO ICT Centre.

We have now just started a new project aiming at bringing more strongly together our capabilities in search and delivery, working with colleagues in Canberra.

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Towards a comprehensive framework for the evaluation of adaptive systems

Most evaluations on adaptive hypermedia (AH) systems done to date are empirical studies of specific applications under particular conditions, and they focus on one dimension: the end-user.

More recently, there have been some system-oriented evaluations. Based on reference models proposed for AH systems, these have started to look at the systems' performance and the validity of their design to guide more effectively the design of future systems. While this work has provided significant changes in the way AH systems are evaluated, we argue that we must still go further. We must enlarge the view of system-oriented evaluations by evaluating other aspects of a system, such as the cost of building an application or the ease of integration with other software.

To get started, we have focused on evaluating the design of an underlying AH architecture with its impact on the maintenance of an application. In particular, we looked at the cost of modifying/updating a system to new requirements with respect to what would need to be changed, what expertise would be required to perform the changes, and the time and effort expected. This aims at providing an insight into an AH architecture's customisability, its maintainability, its flexibility to be extended or modified, and the degree of reusability it allows. We believe this would help us understand the benefits and costs associated in developing AH applications and start comparing various architectures.

Do tailored documents make a difference?

One of the key stones of our technology is the ability to customise the information provided to the users' needs. To evaluate the impact of the tailoring on users, and, in particular, whether this is helping them find the information they need, we set up an experiment using SciFly, one of our demonstrators. SciFly delivers customised corporate brochure on user-selected topics, chosen from the CSIRO ICT Centre's capabilities, projects and application domains.

The experiment we conducted compares SciFly brochures, generated automatically, with the traditional paper brochures manually written by communication experts. Subjects were split in two groups: one was given the SciFly brochure while the other group had a set of manually written brochures covering the same topic of research. Subjects were asked to gather a list of information from this material. We measured the accuracy and precision of the information retrieved (correct *vs.* incorrect information items) and the time needed to perform the task.


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The outcomes were very encouraging, showing that subjects performing with our automatically generated brochure were faster in accomplishing the task while demonstrating as good a performance as the other group.

Dwell-based pointing interaction: An experiment

We conducted experiments in a hand-immersive environment to understand how the referential act of manually pointing can be used in dialogue systems and for Human Computer Interaction.

Human communication with an environment (whether in a traditional desktop computer environment or in multimodal dialogue system) often relies on the possibility of being able to explicitly refer to an external object. Whether we use a pointing device like a computer mouse, a pen, stylus or even the bare hand, the pointing action or manual deixis is a fundamental means of expressing an intention nonverbally. While Fitts' law describes the time required to move towards a target, our study concentrates on the dwell-time that is the time the user remains nearly motionless on the target object.

We examined the pointing actions of test persons performing a simple choice task. The subjects had to express their selection by pointing at objects as an answer to a question. We also examined the reaction time of subjects confirming the selection. For the observer the embodiment of the interaction was represented merely by the moving stylus of the actor. The analysis of the interaction data reveals a consistent temporal pattern for the communicative interaction between actor and observer. Although the production and reception of the action was decoupled, the turn taking between the communication partners happened in a mutual agreed style and were consistently interweaved.