

June 2011

Welcome to the fourth CHI+MED project update. Since our last newsletter we have had our second facilitated '[Creativity@home](#)' workshop, thanks to EPSRC funding. We used the two days to make progress on within-project communications. This included activities on integrating different perspectives on infusion pump design and identifying innovative approaches to keeping up to date with each other's activities.

Welcome to new researchers **Chrystie Mykietiak** (Queen Mary) and **Carlos Monroy** (Swansea). We have advertised the final four CHI+MED PhD studentships, which will start in September, one at each project site.

Papers have been presented at [CHI2011](#) and accepted for publication at [HCI2011](#), [EWDC2011](#), [FMIS2011](#), [HFES2011](#) and [EICS4Med](#). More details on these conferences are available on our [website](#).

Ann Blandford, a.blandford@ucl.ac.uk

Public engagement activities

In March **Dominic Furniss** presented a poster at '[SET for Britain](#)' for Early Career Researchers, at the House of Commons. He met MPs Frank Dobson and David Evennett as well as David O'Neill, the Chief Executive of the [Institute of Ergonomics & Human Factors](#).

Dominic also took part in UCL's '[Bright Club](#)', a public engagement medium previously covered by the New York Times and The Guardian, in which academics use comedy to promote their research. Dominic mentioned CHI+MED and the problem of human error in his performance and he also raised £335 for Comic Relief.

'[Microwave racing](#)', a video Dominic made with colleagues from UCL and Queen Mary about usability, was awarded a "Golden Mouse" at CHI2011 and won joint third place in the HFES (Human Factors and Ergonomics Society) [YouTube video competition](#).

Dominic Furniss, d.furniss@ucl.ac.uk

Project updates

Situated work – pump use in a hospital setting

Data gathering for the first study was completed just before the October 2010 CHI+MED meeting at Letchworth, where preliminary results were reported. Much progress has been made since, with further analysis and reporting: a Technical Report is now complete; a short paper will be presented at EICS4Med; and full papers have been accepted at British HCI and Resilience Engineering. The Haematology and Oncology Day Care Unit has provided a good foundation for our next studies. Ethical approval has recently been obtained for three contrasting contexts in hospital, and home studies are being planned. Meetings are also being held to specify [DiCoT](#) more fully and move towards testing a formalism of this technique.

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Working with the Medical Device Industry

We have been learning from the experiences of medical device developers. Feedback has identified the need for support across a number of themes including collaborative and interdisciplinary working practices, understanding the skills and background of users, justification of user centred techniques and improvements relating to the clarity and brevity of guidance. We aim to provide practical and easily adoptable material to address these challenges and will be

learning about what works and what doesn't work in practice. Examples include the provision of scenarios, use cases, design patterns, automated checking routines and checklists regarding commonly used features. We will be outlining some of this during our manufacturer workshop to be held in UCL on the 11th and 12th of July 2011. If you would like to be involved please contact **Chris**.

Chris Vincent, c.vincent@ucl.ac.uk, +44 (0)20 7679 0694.

CHI+MED Swansea Summer Workshop: a second workshop for medical device designers / manufacturers will be held at Swansea University on Friday 12 August 2011. For more information please contact **Karen**.

Karen Li, Yunqiu.Li@swansea.ac.uk

Mental models in formal analysis of pumps

Together with project members from Swansea, we have been analysing the predictability of infusion pump interfaces. [Formal models](#) of the number entry systems were developed together with the expectation model (i.e. what the user expects to see) of expert users for two pumps (Alaris GP and BBraun Infusomat Space). Using model checkers, the two models were automatically compared to determine whether it is possible for user expectations to diverge from the pump responses to their button presses. At Queen Mary, we have also been working on combining abstract models of user behaviour with constraints on the acceptable degree of cognitive mismatch. This provides a way to automatically analyse the efficiency of user interactions with a pump in more realistic scenarios. Our work is reported in two papers accepted for [FMIS2011](#).

Rimvydas Rukšėnas, rimvydas@eecs.qmul.ac.uk

Errors in number entry – a taxonomy

Incorrect doses are a common medical error. Using a set of [number entry](#) errors gathered last year, I have created a taxonomy for them which lists the varying types of errors collected and groups them by potential cause and at what point they occur during the number entry process. Entry errors don't just have to happen upon typing the numbers in, they can occur when a number is misread from a prescription or when digits get jumbled up in memory before typing. From this initial taxonomy I can investigate whether some errors are more likely at certain stages of number entry and begin to understand what causes them.

Sarah Wiseman, sarah.wiseman.10@ucl.ac.uk

Interactive design and glucose monitors

Tom Owen and **Parisa Eslambolchilar** (Swansea University) attended the "[Advanced Technologies and Treatments for Diabetes](#)" conference in February where they had a poster accepted along with **George Buchanan** (City University) and **Richard Bracken** (Swansea University).

They were presenting work which has been investigating the potential consequences of poor interface design on glucose monitors.

Many manufacturers attended the conference and also hosted exhibitions of their latest products, providing an excellent opportunity to interact with those conducting research into the next generation of devices to support people with diabetes.

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