

State of the Art: HCI in New Zealand

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Abstract: This report briefly describes the state of the art of HCI research at seven of New Zealand's eight universities. HCI research areas include new interaction paradigms for shared computing interfaces, mobile computing, visualisation of stochastic data and software, navigation in GUI and virtual environments, multi-modal interaction, and human-systems interaction.

Keywords: HCI, country, New Zealand

1 Introduction

This report will present a brief overview of the current state of research into HCI in New Zealand. HCI research may be found in Information Systems, Psychology, and Computer Science departments across the country's eight universities. While institutions like Massey University have a HCI tradition going back to the 1980s, the country's HCI research history is generally more recent, with a significant and growing collaboration with industry in usability research and product development.

Each of the organisations that responded to this survey has specific research foci. Their areas of research are described next, starting with universities in the north of the country.

2 University of Auckland

In the Department of Psychology, University of Auckland, recent projects have included studies that compared electronic and face-to-face communications; studies of computer and Internet use by New Zealand school children, working adults and retired adults and its impact on other activities, social relationships and self-image; and an ergonomic analysis of the requirements for spoken control of a robot vacuum cleaner. Contact: Dr Brenda Lobb, email: b.lobb@auckland.ac.nz

At the Department of Computer Science, University of Auckland, research in HCI may be found across three research groups: the Innovative

Software Systems and Tools group is investigating visual language and sketch-based interfaces in collaboration with the government-funded Large Interactive Display Surfaces (LIDS) project; the Graphics Group is investigating alternative interfaces for interacting with virtual worlds and on-line sketch recognition; and the Centre for Image Technology and Robotics is investigating vision interfaces for tracking hand gestures, and face and lip movements. Contact: Dr Kevin Novins, email: novins@cs.auckland.ac.nz

3 Auckland University of Technology

The Usability Research Laboratory, Auckland University of Technology, investigates methods of usability engineering. The research includes the evaluation of how the Large Interactive Display Surface can be used in teaching and in meeting room support; oral interfaces for a cultural history system; interactive, step-by-step tutorial systems for learning database modelling through demonstration; and the study of usability in the interactive computer games environment. Contact: Dr Philip Carter, email: phil.carter@aut.ac.nz.

4 University of Waikato

The HCI Group in the Computer Science Department at the University of Waikato, Hamilton, focuses on HCI issues emerging in the new era of shared, pervasive, networked computing. The Group is

developing novel interaction styles for supporting a more reflective, laid-back pace; a new “What You Do Is What You See (WYDIWYS)” white-board paradigm; new technologies such as the Large Interactive Display Surfaces for lecture support and capture; new ways for travel agents and clients to visualize and edit shared views of trip itineraries; and interaction techniques for searching and browsing on the small screens of PDAs and mobile phones. The Waikato Usability Laboratory was designed to flexibly accommodate different experimental designs that are demanded by industry and research-type work. Contact: Dr Matt Jones, email: hci@waikato.ac.nz.

5 Massey University

The HCI Group, Institute of Information Sciences and Technology at Massey University is in Palmerston North. The Group runs GUI design seminars; develops application-specific interfaces for industry; conducts research into integrating HCI into software engineering and developed methods such as CONDUIT, and supporting software that integrates the use of Lean Cuisine+ task descriptions in UML use cases within the framework of the Rational Unified Process; and a method for harmoniously colouring interfaces. The Group is also investigating interfaces for on-line marking of assignments, in particular, developing techniques for annotating the assignment on-line, with symbols and comments as one would on paper. New opportunities are being explored with the arrival of the tablet PC. Contact: Associate Professor Chris Phillips, email: C.Phillips@massey.ac.nz

6 University of Canterbury

At the University of Canterbury in Christchurch, the HCI & Multimedia research group is based within the Department of Computer Science and has been researching techniques for reducing the problems of constrained display spaces. One technique, “Speed-Dependent Automatic Zooming” allows zooming out during rapid scrolling and zooming in when scrolling slowly, as a means of providing focus and context during window navigation. Other research includes the effect of spatial memory on interaction in 2D and 3D environments; the exploration of the “next generation” web navigation tools; software visualisation techniques; and input techniques for music score-writing. Contact: Dr Andy Cockburn, email: andy@cosc.canterbury.ac.nz.

7 Lincoln University

Lincoln University is situated just outside of Christchurch, and the HCI research group is located within the Applied Computing, Mathematics and Statistics Group. Recent projects investigate how users with different abilities and experience use Inductive User Interfaces such as those found in the Microsoft XP operating system; and explore how stochastic and modeling data can be meaningfully visualized, e.g. how should the probabilities of finding certain concentrations of flows of pollutants in aquifers be presented. Contact: Dr Clare Churcher, email: churchec@tui.lincoln.ac.nz

8 University of Otago

At the University of Otago, Dunedin, HCI research is conducted at the Multimedia Systems Research Laboratory, Department of Information Science. It focuses on the study of human-systems interaction, interaction with virtual environments, and virtual objects intended for use in museums, learning operative techniques in dentistry. Cognitive engineering approaches are used to study how human operators control dynamic systems such as electricity generation and emergency ambulance control centres. Other research includes the development of cheaper qualitative data analysis techniques, such as the Emergent Themes Analysis; and the identification of interaction and alternative representation strategies for the novel Multi-Layered Display (Deep Video Imaging Ltd). Contact: Associate Professor William Wong, email: william.wong@stonebow.otago.ac.nz

9 Conclusion

Although HCI research in New Zealand dates back to the 1980s, it is in general quite a recent development. While some collaboration has occurred between universities, the research areas are quite diverse. A new national organisation, the New Zealand Chapter of the ACM SIGCHI was set up in 1999, and has since provided a forum for local researchers to discuss their work through the CHINZ conference series. As the research into HCI in New Zealand matures, we expect to see more government and industry funding for projects that will address the nature of interaction in new and novel domains and applications.