

# Ian Oakley

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## Research Statement

Computation has escaped the desktop and spread into the fabric of everyday life. Underlying technological advances are embedding digital processing in new formats, contexts, scenarios and social situations at an accelerating pace. As things start to think, questions of how users can relate, understand, control and interact with them come to the fore. Ian Oakley's research interests lie in the design, development and evaluation of multi-modal human-computer interfaces to meet this emerging need. By tapping into contextual input modalities, such as location, unexplored sensory modalities, such as haptics, and novel theories of the mind, such as embodied cognition, his work seeks to design for the next generation of mobile, wearable and tangible computing devices. Ultimately, the value this approach lies in its incorporation of new forms of input and output in order to harness the full capacity of the human body to create experiences that are seamless, expressive and well matched to our environments and tasks. Overall, Oakley's work rests at the intersection of psychology and interaction design: a broad perspective fuels concept development, while rigorous scientific observation explains and grounds results.

## Experience

University of Madeira, Portugal / Carnegie Mellon University, USA                      2007-onwards  
Assistant Professor / Adjunct Assistant Professor

I am a founding member and vice-president (2011-onwards) of the Madeira Interactive Technologies Institute. My current funded research projects and graduate student supervisions are in the domains of sustainable ICT, social computing, tangible user interfaces and tele-robotic control. I co-direct the Carnegie Mellon | Portugal dual degree Masters of Human-Computer Interaction (2009-onwards). I teach classes on Human Factors, Embodied Interaction and user interface design, development and evaluation. I also supervise Masters of HCI projects conducted in collaboration with industry partners including Portugal Telecom, Novabase and Logica. I am on the editorial board of the journals Elsevier Interacting with Computers (2009-onwards) and Hindawi Advances in Human-Computer Interaction (2010-onwards). I co-organised and co-edited the 13th European Conference on Cognitive Ergonomics (2008) and served as papers co-chair for ACM Tangible, Embedded and Embodied Interaction (2011), events both held in Funchal, Portugal. I was a visiting professor at KAIST, South Korea between June and August of 2011.

Electronics and Telecommunications Research Institute, Korea                      2006-2007  
Gwangju Institute of Science and Technology, Korea                      2005  
Researcher / Post-Doctoral Researcher

I held two positions in Korea, firstly at a leading research university and secondly at the premier state-run ICT R&D agency. In both positions, my fundamental role was to add HCI expertise to human-centred research projects conducted by a predominantly engineering focused community. Duties included design, evaluation and usability work in tactile sensing, motion input for mobile and wearable devices and virtual reality systems. I also presented short lecture courses on advanced HCI issues, notably perception and psychophysics, and advised research students in their MSc and PhD work. I co-chaired the 2<sup>nd</sup> International Workshop on Haptics and Audio Interaction Design in 2007.

MIT Media Lab Europe, Ireland                      2001-2004  
Post-Doctoral Research Associate

At Media Lab Europe, the European research partner of the MIT Media Lab, I worked on a range of multi-modal computer interfaces. Project topics included interfaces for the visually impaired, novel communication technologies, media systems, gesture recognition, and new interaction techniques afforded by incorporating novel sensing functionality into mobile devices. I was awarded research grants from the Irish Higher Education Authority (supervision of a PhD scholarship entitled Bodyspace), Science Foundation Ireland (to support Eurohaptics'03) and the European Union (MICOLE, a sixth framework STREP). Research at MLE was also highly exposed to industry, which provided extensive experience in liaising and working with corporate partners on research projects. Finally, I co-chaired and co-organised the EuroHaptics 2003 conference.

## Education

University of Glasgow, UK 1998-2003

Ph.D., Department of Computing Science, Professor Stephen Brewster

Haptic Augmentation of the Cursor: Transforming Virtual Actions into Physical Actions

My doctoral research stemmed from the observation that cursor interactions form a rich interaction modality, but unlike other complex interfaces, are associated with no explicit tangible feedback. To investigate the potentially beneficial properties of incorporating such physical feedback into virtual interfaces, haptic cues were integrated and empirically evaluated into two application scenarios: targeting tasks in graphical user interfaces, and communication through touch in synchronous collaborative systems.

University of Glasgow, UK 1993-1998

B.Sc. (Joint Hons) First Class, Departments of Computing Science and Psychology

Final year research projects included the development and systematic evaluation of a face processing neural network and the design and human-centric study of a WWW based relevance feedback system built on the SMART information retrieval engine. I was awarded the class prize in Computing Science

## Selected Publications

- 2011 Vazquez-Alvarez, Y., Oakley, I and Brewster, S.A. "Auditory display design for exploration in mobile audio-augmented reality". Accepted in Personal and Ubiquitous Computing (PUC). Springer. [Journal]
- 2010 Esteves, A., Oakley, I. (2010) "Mementos: A Tangible Interface Supporting Travel", in Proceedings of NordiChi 2010, Reykjavik, Iceland. [Conference]
- 2010 Bianchi, A., Oakley, I. and Kwon, D. "The Secure Haptic Keypad: A Tactile Password System" in Proceedings of CHI'2010, Atlanta, GA, USA. [Conference]
- 2009 Cha, J., Oakley, I., Ho, Y.S., Kim, Y., and Ryu, J. "A Framework for Haptic Broadcasting" IEEE MultiMedia, July-September, 2009, pp. 16-27. [Journal]
- 2009 Oakley, I. and Park, J. "Motion Marking Menus: an eyes-free approach to motion input for handheld devices" International Journal of Human-Computer Studies, 67, 6, pp. 515-532. [Journal]
- 2008 Oakley, I. & Park J., "Did you feel something? Distracter Tasks and the Recognition of Vibrotactile Cues", Interacting with Computers, 20 (3) (May. 2008), pp. 354-363. [Journal]
- 2006 Oakley, I., Kim, Y., Lee, J. & Ryu, J. "Determining the Feasibility of Forearm Mounted Vibrotactile Arrays", in Proceedings of Haptics Symposium'06, Arlington, VA. [Conference]
- 2005 Oakley, I & O'Modhrain, S. "Tilt to Scroll: Evaluating a Motion Based Vibrotactile Mobile Interface" in Proceedings of World Haptics'05, Italy [Conference]
- 2002 Oakley, I, Adams, A., Brewster, S., Gray, P.D. "Guidelines for the Design of Haptic Widgets" in Proceedings of BCS HCI 2002, London (awarded best paper). [Conference]
- 2000 Oakley, I., McGee, M.R., Brewster, S.A. and Gray, P.D. (2000). "Putting the feel into look and feel" in Proceedings of CHI'2000, The Hague, NL. [Conference]

Full publication list available online: <http://www.whereveriam.org/work/publications.html>

## Personal Information

Date of Birth: 02/06/1976

Nationality: British

Marital Status: Married

Languages: Native English, basic Spanish, basic Portuguese, basic Korean

Interests: Travel, ethnic cooking, whisky, juggling, diving, independent cinema

Referees are available on request