Thomas Bartindale

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I am a PhD student in the School of Computing Science at Newcastle University undertaking research in tangible and tabletop interaction in high stress environments. My research is practice driven (informed by theory) and I have developed a number of novel interactive surfaces ranging from an art installation at the SAGE Gateshead to GNM's current Lindow Man exhibit (in collaboration with David Kim and Guy Schofield). I am particularly interested in collaborative settings in which users are under significant time pressure and scrutiny.

Education

BSc Hons Computing Science (1st class), Newcastle University, UK (2008)

For my final project I developed the Media Crate live media mixing interface based on tangible and touch interaction. I later presented this as a poster at IEEE Tabletop 08 and a full paper at TEI 09.

Recent Positions

BBC Research, Manchester	July 10 – Present	As a research intern with the R&D department, I am developing novel interactions for live media production, concentrating around on-location shoots and the extreme pressures that exist in this scenario.
ACM Crossroads Magazine	July 09 – Present	Departments Editor ACM Crossroads "The Student Journal of the Association for Computing Machinery". This involves liaising with editors, writers and contributors to produce content for the quarterly issue, for which I am responsible for all non-feature content.
Microsoft Research, Redmond	June 09 – August 09	Intern at Microsoft's primary research facility in Redmond, WA. Worked with E-Science annotation and spatial data analysis on Microsoft Surface technology, submitting two papers. Working within the External Research team, I produced a tool on the Surface that can be used for data annotation and sharing.

Publications

1. **Bartindale, T. & Jackson, J. *E-Surface: An Exploration of Tabletop Interaction for E-Science*, E-Science 09 (in submission)**

   Explores the use of surface and tangible computing for annotation and knowledge discovery in large data sets, interfacing with e-science systems. The ability to interact, share and publish resources is described along with the prototype implementation on a Microsoft Surface.

2. **Bartindale T. & Harrison, C. Stacks on the surface: resolving physical order with masked fiducial markers, ACM International Conference on Interactive Tabletops and Surfaces, Banff, Canada (2009).**

   A collaboration with Chris Harrison (CMU) resulting in a novel invention and implementation of

stackable objects on a Microsoft Surface. We demonstrate how our system can recognise the presence of any combination of up to 10 markers, including their order within the stack. We give an algorithm for calculating the required markers.

3. **Bartindale T. Jackson, D. & Olivier, P. *FiberBoard: Compact Multi-Touch Display Using Channelled Light,* ACM International Conference on Interactive Tabletops and Surfaces, Banff, Canada (2009).**

   Describes a patented system for producing smaller form factor multi-touch displays using existing technology. Based around fibre optic strands placed in a grid layout behind a standard FTIR touch panel, routing light to a camera mounted to the side of the device.

4. **Schöning, J., Hook, J., Bartindale, T., Schmidt, D., Olivier, P., Echtler, F. Motamedi N. & Brandl, P. Building interactive multi-touch surfaces. In: C. Müller-Tomfelde (Ed.) Tabletops – Interactive Horizontal Displays, Springer Verlag (in press)**

   This is the first edited collection on tabletop interaction software, technologies and design. Our chapter is a collaboration with a number of other European researchers in which we describe our collective experiences of building multi-touch displays (concentrating on display options and projection).

5. **Hoey, J. Blunsden, S., Richards, B, Burns, J. Bartindale, T., Jackson, D., Olivier, P., Boder, J. & Mihailidis, A., *ePAD: Engaging Platform for Art Development*. IJCAI'09 Workshop on Assisted Cognition, Pasadena, California, USA (2009).**

   Description of the novel interaction design element of a collaboration with the University of Dundee and the University of Toronto, of a hardware and software system to aid art therapists treat clients in a less supervised environment.

6. **Blunsden, J., Richards, B, Bartindale, T., Jackson, D., Olivier, P., Boder, J., Mihailidis, A. & Hoey, J. *Design and Prototype of a Device to Engage Cognitively Disabled Older Adults in Visual Artwork*. Workshop on Affect & Behaviour Related Assistance in the Support of the Elderly, PETRA-09, Corfu, Greece (2009).**

   Description of the probabilistic tracking (for user attention) component, of a collaboration with the University of Dundee and the University of Toronto, of a hardware and software system to aid art therapists treat clients in a less supervised environment.

7. **Bartindale, T., Hook, J., and Olivier, P. 2009. Media Crate: tangible live media production interface. In Proceedings of the 3rd international Conference on Tangible and Embedded interaction (TEI '09) Cambridge, United Kingdom (2009)** (19% talk acceptance rate)

   Description of a portable tangible interface developed to enable collaboration within a high stress, low visibility environment. The system facilitates live media production, allowing multiple inputs to be cued and sourced to multiple outputs in real time. Includes an extended description of my undergraduate project system including a new analysis of the design rationale for tangible controllers.

8. **Schöning, J., Bartindale, T., Olivier, P., Jackson, D., Krüger, A., and Kitson, J. iBookmark: locative texts and place-based authoring. In Proceedings of the 27th ACM International Conference Extended Abstracts on Human Factors in Computing Systems, Boston, MA, USA (2009).**

   The result of a collaboration with the University of Münster: an e-book reader augmented with a mobile phone GPS device uploads its current position to a server. This allows the generation of locative narratives, in which aspects of the book to change depending on the reader's location history and personal factors such as contacts.

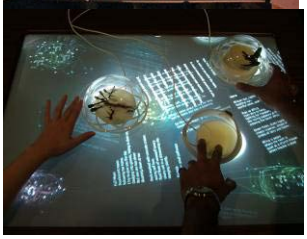
9. **Poster**: Bartindale T., Hook J. & Olivier P. *(2008) A Tangible Interface for Live Media Production*, Poster: IEEE Tabletops and Interactive Surfaces (Tabletop 08), Amsterdam (2008).

10. ***Patent**: Multi-touch interaction technology (patent)*: in submission (Newcastle University). Joint invention with Dan Jackson (Newcastle University) for a thin form factor multi-touch display.

Installations

Great North Museum
A multi-user multi-touch interface based around two circular tables at different heights. Part of the Lindow Man exhibition at GNM, the system allows visitors to interact with the digital copy of remains of Lindow Man by playing the part of a Crime Scene Investigator. Visitors interact with the display by touching various controls allowing them to recreate the incidents that led to the Man's death. Based on FTIR and projector technology, and built from Flexi MDF.

Media Crate
A multi-media mixing console developed for multi-user interaction in high stress, high noise environments. Based on tangible objects placed on the surface of a portable tabletop unit, it allows users to control video, audio, and networked media to various outputs. Built with a Samsung min projector, reacTIVision tracking library and VLC in C# for media playback.



Sage Gateshead Project
An art installation in which pieces of art are tagged with markers, so that when they are placed on various areas of an interactive coffee table, related artwork, poems and audio is displayed around it. Using powered markers, the public can see content animate gently around the surface, using WPF in C#. A 2000lm short throw projector is used with all electronics being contained in the table.

Art Therapy
A multi-touch coffee table based on FTIR technology. Software on the table replicates real world properties of finger painting, allowing therapists to set up un-supervised sessions for people with dementia. The coffee table is similar to the Sage project, but includes a compliant surface and infrared camera in the unit. Software written in C#.

Pen-Based Educational Tool
A multi-pen electronic whiteboard, used as a table provides an interface for school children to solve mysteries. The software allows users to group, annotate and sequence clues to follow their reasoning. This Java application provides feedback to the users on their splitting of tasks, and utilises a Promethean whiteboard and Samsung short throw projector in a custom housing (software and concept due to Ahmed Sulaiman).

Skills & Knowledge

Hardware / Electronics	Basic electronics skills, but significant workshop experience, including wood, metal and plastic working. Much of development work has involved building prototypes incorporating both digital and analogue electronics.
Programming	Significant experience: .NET (C#, WPF, Silverlight); web programming (ASP, PHP, ASP.NET); Java and C++. Significant experience using WPF, in multi-touch and tangible tables.
Interaction design	Through my involvement in the design of numerous interfaces and hardware I have knowledge of user-centred design and usability evaluation. I also have excellent communication skills and recognise the importance of development a rapport with clients and co-workers.

2005-2008	BSc Hons in Computing Science (1st class), Newcastle University, UK
2002-2004	A levels (High School) Maths (A); Further Maths (B); Physics (A), Computing (A); Theatre Studies AS (A)

Past Employment / Work Experience

Tom Bartindale Media	Sep. 2007 – Present	Self employed media design and consultancy work including web design, programming and interface prototype construction.
Proctor & Gamble	July 2007 – Sep. 2007	Part of an undergraduate Internship program in the Information Systems Department, utilising project management skills in leading a small IT related project.
Fresher Start	2006	On my own initiative I started up a small business repairing university students computers & networks. As part of this project I also developed a bespoke website with on-line booking facilities.
Elucid8	Sep. 2004 – July 2005	Worked as Production and Web Design Engineer. Part of a mentoring programme run by The Salvation Army.

Achievements

2005-2007
I was technical Director of Newcastle University Theatre Society. Acting in this capacity I attended regular meetings, both with the executive of the society and with directors of productions. At these meetings I was involved in the decision making process for logistical and technical aspects of the productions, including the budgeting for hire of venues and equipment. I was also responsible for a team of technicians, organising their allocation, and running training sessions. I currently, continue to play an active role in the actual engineering of major events.

2006
Project Manager of Inter-University software development team developing cross-platform system in Java, facilitating communication between members during the design and implementation of the system.

2001-2003
I organised and helped to organise and provide technical support for various music and drama events at a range of venues, including Plaza Theatre Stockport. This included specifying and arranging hire of specialist equipment. I was also part of the technical team organising a quarterly multi-media event at my church, which involved organising logistics and staffing for the event.

2001-2002
I was part of the Royal Exchange Young People's Theatre Group in Manchester. This involved a regular weekly commitment over 8 months and weekend workshops. The group devised and staged the annual production, including sound and lighting design, stage design, direction and stage management. I was responsible for technical aspects of the performance, including collaboration with the Royal Exchange professional team.

Referees

Prof. Patrick Olivier	Professor of Human-Computer Interaction, School of Computing Science, Culture Lab, King's Walk, Newcastle University, NE1 7RU, UK p.l.olivier@ncl.ac.uk
Prof. Paul Watson	Director of North-East Regional e-Science Centre, School of Computing

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