DR. MARK T. MARSHALL

Senior Lecturer in Software Engineering
Department of Computing,
Faculty of Science, Technology and Arts
Sheffield Hallam University
UK

EMPLOYMENT

Sep. 2016–present	Senior Lecturer in Software Engineering, Sheffield Hallam University.
2013– Sep. 2016	Research Fellow, Sheffield Hallam University.
2009–2013	Research Assistant, University of Bristol.

REFEREED PUBLICATIONS

2019

Aaron Ellis, **Mark T. Marshall**, "Can Skeuomorphic Design Provide a Better Online Banking User Experience for Older Adults?", In *Multimodal Technologies and Interaction*, vol. 3, no. 3, 2019.

Mark T. Marshall, Albrecht Schmidt, Thomas Kubitza, "Experimenting Around IoT for Heritage", In *Interactions*, ACM, vol. 26, no. 5, New York, NY, USA, pp. 40-45, 2019.

Dick van Dijk, Nick Dulake, Daniela Petrelli, **Mark T. Marshall**, Hub Kockelkorn, Elena Not, Dario Cavada, Stefano Maule, Anna Pisetti, Adriano Venturini, "Demo Hour", In *Interactions*, ACM, vol. 26, no. 5, New York, NY, USA, pp. 8-11, 2019.

2018

Mark T. Marshall, "Interacting with Heritage: On the Use and Potential of IoT Within the Cultural Heritage Sector", In *2018 Fifth International Conference on Internet of Things: Systems, Management and Security*, pp. 15-22, 2018.

Caroline Claisse, Daniela Petrelli, **Mark T. Marshall**, Luigina Ciolfi, "Multisensory Interactive Storytelling to Augment the Visit of a Historical House Museum", In *2018 3rd Digital Heritage International Congress (DigitalHERITAGE)* held jointly with 2018 24th International Conference on Virtual Systems Multimedia (VSMM 2018), 2018.

Daniela Petrelli, Nicholas Dulake, **Mark T. Marshall**, Andrew Roberts, Frances McIntosh, Joe Savage, "Exploring the Potential of the Internet of Things at a Heritage Site through Co-Design Practice", In *2018 3rd Digital Heritage International Congress (DigitalHERITAGE)* held jointly with 2018 24th International Conference on Virtual Systems Multimedia (VSMM 2018), 2018.

2017

Daniela Petrelli, **Mark T. Marshall**, Sinead O'Brien, Patrick Mcentaggart, Ian Gwilt, Tangible Data Souvenirs As A Bridge Between A

Physical Museum Visit And Online Digital Experience, In *Personal Ubiquitous Comput.*, Springer-Verlag, vol. 21, no. 2, London, UK, UK, pp. 281-295, 2017.

Elena Not, Massimo Zancanaro, **Mark T. Marshall**, Daniela Petrelli, Anna Pisetti, Writing Postcards From The Museum: Composing Personalised Tangible Souvenirs, In *Proceedings of the 12th Biannual Conference on Italian SIGCHI Chapter*, ACM, New York, NY, USA, pp. 5:1-5:9, 2017.

Izdihar Jamil, Calkin Suero Montero, Mark Perry, Kenton OHara, Abhijit Karnik, Kaisa Pihlainen, **Mark T. Marshall**, Swathi Jha, Sanjay Gupta, Sriram Subramanian, Collaborating Around Digital Tabletops: Childrens Physical Strategies From India, The Uk And Finland, In *ACM Trans. Comput.-Hum. Interact.*, ACM, vol. 24, no. 3, New York, NY, USA, pp. 23:1-23:30, 2017.

2016

Martin Risseeuw, Dario Cavada, Elena Not, Massimo Zancanaro, **Mark T. Marshall**, Daniela Petrelli, Thomas Kubitza, Authoring Augmented Digital Experiences In Museums, In *Proceedings of the International Working Conference on Advanced Visual Interfaces*, ACM, New York, NY, USA, pp. 340-341, 2016.

Daniela Petrelli, Nick Dulake, **Mark T. Marshall**, Anna Pisetti, Elena Not, "Voices from the War: Design as a Means of Understanding the Experience of Visiting Heritage", In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, ACM, New York, NY, USA, pp. 1033-1044, 2016.

Mark T. Marshall, Nick Dulake, Luigina Ciolfi, Daniele Duranti, Hub Kockelkorn, Daniela Petrelli, "Using Tangible Smart Replicas as Controls for an Interactive Museum Exhibition", In *Proceedings of the TEI 16: Tenth International Conference on Tangible, Embedded, and Embodied Interaction*, ACM, New York, NY, USA, pp. 159-167, 2016.

Luigina Ciolfi, Gabriela Avram, Laura Maye, Nick Dulake, **Mark T. Marshall**, Dick Van Dijk, Fiona McDermott, Articulating Co-Design in Museums: Reflection on Two Participatory Processes, In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*, ACM, New York, NY, USA, pp. 13-25, 2016..

Mark T. Marshall, Daniela Petrelli, Nick Dulake, Elena Not, Michele Marchesoni, Elisa Trenti, Anna Pisetti, Audio-based Narratives For The Trenches Of World War I: Intertwining Stories, Places And Interaction For An Evocative Experience, In *International Journal of Human-Computer Studies*, vol. 85, pp. 27 – 39, 2016.

Martin Risseeuw, Dario Cavada, Elena Not, Massimo Zancanaro, **Mark T. Marshall**, Daniela Petrelli, Thomas Kubitza, Authoring Augmented Digital Experiences In Museums, In *Proceedings of the*

International Working Conference on Advanced Visual Interfaces, ACM, New York, NY, USA, pp. 340-341, 2016.

Daniela Petrelli, Nick Dulake, **Mark T. Marshall**, Hub Kockelkorn, Anna Pisetti, Do It Together: The Effect Of Curators, Designers, And Technologists Sharing The Making Of New Interactive Visitors' Experiences., In *MW2016: Museums and the Web 2016*, 2016.

2015 Massimo Zancanaro, Elena Not, Daniela Petrelli, **Mark T. Marshall**, Taco van Dijk, Martin Risseeuw, Dick van Dijk, Adriano Venturini, Dario Cavada, Thomas Kubitza, Recipes For Tangible And Embodied Visit Experiences, *In MW2015: Museums and the Web 2015*, 2015.

Mark T. Marshall, Nick Dulake, Daniela Petrelli, Hub Kockelkorn, From The Deposit To The Exhibit Floor: An Exploration On Giving Museum Objects Personality And Social Life, *In Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems*, ACM, New York, NY, USA, pp. 1917-1922, 2015.

2014 Daniela Petrelli, Nick Dulake, **Mark T. Marshall**, Robin Goldberg, Matt Willox, Fabio Caparrelli, "Prototyping Tangibles: Exploring Form And Interaction", *In Proceedings of the Eigth International Conference on Tangible, Embedded, and Embodied Interaction (TEI 14)*, Munich, Germany, pp. 41-48, 2014.

Jarrod Knibbe, Kenton P. OHara, Angeliki Chrysanthi, **Mark T. Marshall**, Peter D. Bennett, Graeme Earl, Shahram Izadi, Mike Fraser, "Quick And Dirty: Streamlined 3d Scanning In Archaeology", *In Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW 2014)*, Baltimore, Maryland, USA, pp. 1366-1376, 2014.

2013 Izdihar Jamil, Kenton O'Hara, Mark Perry, Abhijit Karnik, **Mark T. Marshall**, Swathi Jha, Sanjay Gupta and Sriram Subramanian, "Dynamic Spatial Positioning: Physical Collaboration around Interactive Table by Children in India", *In Human-Computer Interaction INTERACT 2013 (Paula Kotze, Gary Marsden, Gitte Lindgaard, Janet Wesson, Marco Winckler, eds.)*, Springer Berlin Heidelberg, vol. 8120, pp. 141-158, 2013.

2012 **Mark T. Marshall**, Tom Carter, Jason Alexander and Sriram Subramanian, "Ultra-tangibles: Creating Movable Tangible Objects On Interactive Tables", In *Proceedings of the 30th International Conference on Human Factors in Computing Systems (CHI 2012)*, ACM, 2012.

Izdihar Jamil, Mark Perry, Kenton O'Hara, Abhijit Karnik, **Mark T. Marshall**, Swathi Jha, Sanjay Gupta and Sriram Subramanian, "Group Interaction on Interactive Multi-touch Tables by Children in India", In *Proceedings of the 11th International Conference on Interaction Design and Children (IDC 2012)*, ACM, 2012.

Mark T. Marshall, Peter Bennett, Mike Fraser and Sriram Subramanian, "Emotional Response as a Measure of Liveness in New Musical Instrument Performance", In *Proceedings of the Exploring HCIs Relationship with Liveness workshop at CHI 2012*, 2012.

2011

Ray Yun, Mark D. Gross, Dan Newton, **Mark T. Marshall,** Andrew Stephenson, Christopher Perez, Roel Vertegaal, Ayumi Kawakami a nd Koji Tsukada, Keisuke Kambara, Itiro Siio, "Demo Hour", In *Interactions*, ACM, vol. 18, no. 4, New York, NY, USA, pp. 8-9, 2011.

J. Alexander, **M. T. Marshall** and S. Subramanian. Increasing The Appeal Of Mobile Tv Using Haptic Feedback, In *CHI 2011 Workshop on Video Interaction Making Broadcasting A Successful Social Media*, 2011.

I. Jamil, A. Karnik, **M T. Marshall** and S. Subramanian, "Communication Patterns In Collaborative Peer Learning Around Interactive Tables", In *CHI 2011 Workshop on Child Computer Interaction on UI Technologies and their Impact on Educational Pedagogy*, 2011.

M. T. Marshall and M. M. Wanderley. Examining The Effects Of Embedded Vibrotactile Feedback On The Feel Of A Digital Musical Instrument, In *Proceedings of the 11th International Conference on New Interfaces for Musical Expression (NIME11)*, 2011.

J. Alexander, **M. T. Marshall** and S. Subramanian. Adding Haptic Feedback To Mobile Tv, In *Extended Abstracts of the International Conference on Human Factors in Computing Systems (CHI11)*, 2011.

D. Newton and **M. T. Marshall**. The Augmentalist: Enabling Musicians To Develop Augmented Musical Instruments, In *Proceedings of the fifth international conference on Tangible, embedded, and embodied interaction*, ACM, New York, NY, USA, pp. 249-252, 2011.

D. Newton and **M. T. Marshall**. Examining How Musicians Create Augmented Musical Instruments, In *Proceedings of the 11th International Conference on New Interfaces for Musical Expression (NIME11)*, 2011.

2010

C. Suero Montero, J. Alexander, S. Subramanian and **M. T. Marshall**, Would You Do That? Understanding Social Acceptance Of Gestural Interfaces, In *Proceedings of the 12th international conference on Human computer interaction with mobile devices and services (MobileHCI '10)*, ACM, New York, NY, USA, pp. 275-278, 2010.

2009

M. T. Marshall, J. Malloch and M. M. Wanderley. Gesture Control Of Sound Spatialization For Live Musical Performance, Chapter in *Gesture-Based Human-Computer Interaction and Simulation (Miguel Sales Dias, Sylvie Gibet, Marcelo Wanderley, Rafael Bastos, eds.)*, Springer Berlin / Heidelberg, vol. 5085, pp. 227-238, 2009.

M. T. Marshall, M. Hartshorn, M. M. Wanderley and D. J. Levitin. Sensor Choice For Parameter Modulations In Digital Musical Instruments: Empirical Evidence From Pitch Modulation, In *Journal of New Music Research*, vol. 38, no. 3, pp. 241-253, 2009.

X. Pestova, E. Donald, H. Hindman, J. Malloch, **M. T. Marshall**, F. Rocha, S. Sinclair, D. A. Stewart, M. M. Wanderley and S. Ferguson. The Cirmmt/mcgill Digital Orchestra Project, In *Proceedings of the International Computer Music Conference (ICMC09)*, pp. 295-298, 2009.

2008 G. Marentakis, J. Malloch, N. Peters, **M. T. Marshall**, M. M. Wanderley and S. McAdams. Influence Of Performance Gestures On The Identification Of Spatial Sound Trajectories In A Concert Hall, In *Proceedings of the The 14th International Conference on Auditory Display (ICAD08)*, 2008.

X. Pestova, **M. T. Marshall** and J. Sudol. Analogue To Digital: Authenticity Vs. Sustainability In Stockhausen's Mantra (1970), In *Proceedings of the International Computer Music Conference (ICMC08)*, 2008.

2007 **M. T. Marshall**, J. Malloch and M. M. Wanderley. Non-conscious Control Of Sound Spatialization, In *Proceedings of the 4th International Conference on Enactive Interfaces (ENACTIVE07)*, pp. 377-380, 2007.

2006 **M. T. Marshall** and M. M. Wanderley. Vibrotactile Feedback In Digital Musical Instruments, In *Proceedings of the International Conference on New Interfaces for Musical Expression (NIME06)*, pp. 226-229, 2006.

M.T. Marshall, N. Peters, A.R. Jensenius, J. Boissinot, M.M. Wanderley and J. Braasch. On The Development Of A System For The Gesture Control Of Spatialization, In *Proceedings of the International Computer Music Conference (ICMC06)*, pp. 260-266, 2006.

M. T. Marshall and M. M. Wanderley, Evaluation Of Sensors As Input Devices For Computer Music Interfaces, Chapter in *Computer Music Modeling and Retrieval (Richard Kronland-Martinet, Thierry Voinier, Slvi Ystad, eds.)*, Springer Berlin / Heidelberg, vol. 3902, pp. 130-139, 2006.

2004 **M. Marshall**. Virtual Sculpture - Gesture Controlled System For Artistic Expression, In *Proceedings of the AISB 2004 COST287-ConGAS Symposium on Gesture Interfaces for Multimedia Systems*, pp. 58-63, 2004.

2003 R. Bresin, S. Dahl, **M. Marshall**, M. Rath and B. Moynihan. Controlling The Virtual Bodhran - The Vodhran, In *Proceedings of the Stockholm Music Acoustics Conference (SMAC03)*, pp. 685-688, 2003.

2002 **M. Marshall**, B. Moynihan and M. Rath. The Virtual Bodhran - Design And Development Of A Virtual Musical Instrument, In

Proceedings of the International Computer Music Conference (ICMC02), 2002.

R. Bresin, K. Falkenberg Hansen, S. Dahl, M. Rath, **M. Marshall** and B. Moynihan. Devices For Manipulation And Control Of Sounding Objects: The Vodhran And The Invisiball, Chapter in *The Sounding Object (D. Rochesso, F. Fontana, eds.)*, 2002.

M. Marshall, M. Rath and B. Moynihan, The Virtual Bodhran: The Vodhran, In *Proceedings of the 2002 conference on New interfaces for musical expression*, 2002.

GRANTS AND AWARDS

2019 InnovateUK, Knowledge Transfer Partnership 11924, grant amount GBP187,041.

2018 InnovateUK, Knowledge Transfer Partnership 11052, grant amount GBP93,968.

2017 Best Paper Award, CHITALY 2017.

2011 Alberta Foundation for the Arts Music Project Travel Grant

2010 Alberta Foundation for the Arts Music Project Grant

2006-2007 Interdisciplinary Excellence Prize, Center for Interdisciplinary Research in Music Media and Technology

Student Award, Center for Interdisciplinary Research in Music Media and Technology

2002 Shannon Development Campus Innovation Award, for VisiBreath project

PATENTS AND DISCLOSURES

2002 M. Fernstrom, M. Lennon and **M. Marshall**: (WO/2002/041777) A device for converting a characteristic of a flowing fluid into electronic signal and a respiratory monitor for monitoring fluid flow, granted September 22nd 2004.

RESEARCH EXPERIENCE

2019–present **Innovate UK Knowledge Transfer Partnership - Interaction design for online collaborative workflow systems, Sheffield Hallam University, UK**,
A knowledge transfer partnership between Sheffield Hallam University and Guildhawk Ltd. To design and develop an innovative digital platform that will support the transparent management of the next generation of gig-economy contractors, using cloud-based technologies, advanced process automation, enhanced security and user experience design.

2018–present **Innovate UK Knowledge Transfer Partnership - IoT for Industry, Sheffield Hallam University, UK**,

A knowledge transfer partnership between Sheffield Hallam University and Infraglo Ltd. Investigating issues around the use of IoT for the management and maintenance of industrial heaters and burners. Collaborating on the development of a new digitally-enabled product line for Infraglo.

2017–present **Researcher: REVEAL project, Sheffield Hallam University, UK**,
An EU Horizon 2020-funded research project. Researching the use of tangible interaction and immersive experiences in innovative educational applications which engage world-wide audiences in the Europes rich historical and scientific heritage. Supported by the R&D team at Sony Interactive Entertainment Europe (SIEE). Researching and developing inclusive narrative-driven VR experiences which improve the social and physical accessibility of cultural heritage and contribute to the digital preservation of historical sites.

2013–2017 **Research Fellow: Interface Design & Embedded Systems, Sheffield Hallam University, UK**,
Research, design and creation of novel physical interfaces, primarily for the heritage sector. Developing new interactive experiences for use in museums and on outdoor heritage sites, including tangible, mobile and wearable technologies. Acted as Work Package leader for the meSch project (mesch-project.eu), coordinating the work of researchers from 12 institutions across Europe. Supervised a small team of local researchers working on interactive data visualisation, data souvenirs and user-generated content. Co-supervised undergraduate dissertation projects, as well as mentoring student interns from a number of institutions across the UK and Europe.

2009–2013 **Research Assistant: Physical Interface Design & Novel Interaction Techniques, University of Bristol, UK**,
Investigating and developing new interaction techniques for areas such as mobile devices, education, medicine and the sciences. Developing systems to provide new forms of sensing and feedback for human-computer interaction. Creating multitouch interfaces for use in education, public spaces, and machine control. Conducted both independent and collaborative research projects including helping to supervise Masters and Ph.D. students. Supervised undergraduate degree projects in human-computer interaction. Collaborated with physicists, biologists, school teachers, education researchers, artists, musicians and medical researchers across a number of projects.

2006–2008 **Research Assistant: Gesture-controlled Sound Spatialization Project, McGill University, Canada**,
Interdisciplinary research project for realtime gesture control of sound spatialization in live concert performances. Developed new interfaces and control systems to allow musicians to directly control spatialization of sound during a live performance. Involved in collaboration with musicians, composers and sound engineers. Cre-

ated interfaces that were used in musical performances in France, the USA and Canada.

2006–2008 **Research Assistant: The McGill Digital Orchestra, McGill University, Canada**,
A research/creation project supported by the Appui la recherche-création program of the Fonds de recherche sur la société et la culture (FQRSC) of the Quebec government. Developed new digital musical instruments for concert performance. This involved collaboration with composers, performers, computer scientists and engineers. Work performed in the USA and Canada and featured at Wired Magazines NextFest in 2008.

2003–2004 **Technical Coordinator: Visibreath project, University of Limerick, Ireland**,
Enterprise Ireland Research Innovation Fund IF/2002/313. Developed and patented a bi-directional breath sensor device for use by asthmatic children. Worked in collaboration with health professionals and education researchers to design hardware and software systems that would allow for the monitoring of asthmatic children through gameplay-based interfaces.

2001–2003 **Research Assistant: Sounding Object project, University of Limerick, Ireland**,
EU FET activity of IST research program. Created gesture-based control systems for manipulation of virtual sound objects. Designed and implemented interactive systems for use in museums and public displays.

PROFESSIONAL ACTIVITIES

Conference Organisation

CHI18: Late Breaking Work Program Committee member

MobileHCI2012: Web Chair

ICAD07: Local organising committee member. Chair of student volunteers.

NIME02: Local organising committee member

DAFx01: Local organising committee member

Conference and Journal Reviewing

Reviewer for the International Journal of Human-Computer Studies

Reviewer for the ACM Journal of Computing and Cultural Heritage

Reviewer for the Journal of Information Security and Applications

Reviewer for the Multimodal Technologies and Interaction journal

Reviewer for the Sensors Journal

SIGCHI Conference on Human Factors in Computing Systems (CHI): 2010 – present

ACM Tangible Embedded and Embodied Interaction (TEI): 2011 – present

ACM Interactive Tabletops and Surfaces (ITS): 2010

Interact IFIP TC13 Conference on Human-Computer Interaction: 2011

ACM International Conference on Ubiquitous Computing (Ubicomp): 2011, 2014

ACM Designing Interactive Systems (DIS): 2010, 2012, 2014, 2018

New Interfaces for Musical Expression (NIME): 2002 – 2012

Other Professional Roles

Member of the ACM

Scientific evaluator/reviewer for the Swiss National Science Foundation

Expert reviewer for the Social Sciences and Humanities Research Council (SSHRC), Canada

Ph.D. External Examiner, University of Limerick, Ireland.

TEACHING AND SUPERVISION

2019-present	Module leader for Programming "Things"
2018-present	Module leader for Case Studies in Software Design
2017-present	Supervisor for Ph.D., M.Phil and M.Eng students in Software Engineering
2016-present	Lecturer for Case Studies in Software Design
	Lecturer for Programming Things
	Lecturer for Fundamentals of Computer Architecture
	Supervisor of B.Sc. and B.Eng dissertations in Software Engineering and Computer Science
2013-2015	Supporting undergraduate software engineering projects
	Mentor for student interns
2012	Lecturer for COMS21301 Human-Computer Interaction
2011	Lecturer for COMS21301 Human-Computer Interaction
	Lecturer for COMSM0106 Mobile and Ubiquitous Computing
	Tutor in Computer Music (Audio programming, generative audio, digital audio effects)

	Supervisor for final year undergraduate projects (B.Sc. Computer Science program)
2009–2010	Guest lectures for COMS21301 Human-Computer Interaction on topics including: Haptics, Interactive Surfaces and HCI for Music
	Supervisor for final year undergraduate projects (B.Sc. Computer Science program)
2007	Lecturer for MUMT301 Music and the Internet
2005	Lecturer for MUMT306 Music and Audio Computing (C++ programming for audio)
2004	Teaching Assistant for Digital Signal Processing
2002–2004	Teaching Assistant for Programming Languages (C++)
2002	Teaching Assistant for Software Process Improvement

EDUCATION

2005 – 2009	**Ph.D. (Human-Computer Interaction for Music)**, McGill University, Montreal, QC, Canada. Title: Physical Interface Design for Digital Musical Instruments Supervisor: Prof. Marcelo M. Wanderley
2001 – 2004	**M.Sc. Computer Science (Human-Computer Interaction)**, University of Limerick, Ireland. Title: A System for two-handed gesture control of Interactive applications Supervisor: Mr. Mikael Fernstrom
1997 – 2001	**B.Sc. (Hons.) Computer Systems**, University of Limerick, Ireland.