MAIRE SILE O'MODHRAIN

School of Music, Theatre, and Dance; and the School of Information - University of Michigan

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RESEARCH INTERESTS

- Human-computer interaction (HCI), especially interfaces incorporating haptic and auditory feedback.
- Movement as an interaction design element, including gestural input and motion display.
- Embodied Cognition and its application within HCI.

EDUCATION

Ph.D. Computer-based Music Theory	Stanford University, Stanford, CA, 1994-2000 Dissertation: "Playing by Feel: Incorporating Haptic Feedback into Computer-based Musical Instruments"
Postgraduate Certificate, Higher Education and Training	Queen's University Belfast, 2008
M.S. Music Technology	University of York, York, England, 1988-1989 Project: "Computerized Processing of 3-Dimensional Sound"
Licentiate. Piano Teaching Diploma	Trinity College London, England, 1989
B.A. Music, with honors	Trinity College Dublin, Ireland, 1984-1988

APPOINTMENTS

1. **University of Michigan, Ann Arbor, MI, 2024 - Present.** Professor, Department of Performing Arts Technology, School of Music, Theatre & Dance. Professor of Information, School of Information.

2. **University of Michigan, Ann Arbor, MI, 2023 - 2025.** Chair, Department of Performing Arts Technology.

3. **NewHaptics Corporation, Ann Arbor, MI. 2018 - Present**. Cofounder and Chief User Experience Officer (CXO).

4. **University of Michigan, Ann Arbor, MI, 2014-2024**. Associate Professor, School of Information.

5. **University of Michigan, Ann Arbor, MI, 2011-2024**. Associate Professor, Department of Performing Arts Technology, School of Music, Theatre & Dance.

6. **Queens University Belfast, Sonic Arts Research Centre, Belfast, Northern Ireland 2005-2011**. Senior Lecturer, Director of Research.

7. **Media Lab Europe, Dublin, Ireland, 2001-2005**. Principal Research Scientist, Director Palpable Machines Group.

8. **MIT Media Lab, Cambridge, MA, 2000-2001**. Postdoctoral Researcher, Program in Media Arts and Sciences.

9. **Stanford University, Center for Computer Research in Music and Acoustics, Stanford, CA, 1994-2000**. Ph.D. Thesis: "Playing by Feel: Incorporating Haptic Feedback into the Design of Computer-based Musical Instruments".

10. **Immersion Corporation, San Jose, CA, 1998-2000**. Consultant.

11. **Stanford University, Center for the Study of Language and Information, Stanford, CA, 1994-1998**. Research Assistant.

12. **Interval Research Corporation, Palo Alto, CA, 1996**. Research Internship.

13. **British Broadcasting Corporation Radio, London, England, 1990-1993**. Studio Manager and Producer.

AWARDS

1. James T. Neubacher Certificate of Recognition, Council on Disability Concerns, University of Michigan. 2024. Awarded for work on the design and development of a full-page interactive braille display.

2. Mauli Pandey, Vaishnav Kameswaran, Hrishikesh Rao, **Sile O'Modhrain**, and Steve Oney. (2021). Understanding Accessibility and Collaboration in Programming for People with Visual Impairments. The *Association for Computing Machinery's Conference on Computer-Supported Cooperative Work and Social Computing*. Toronto, Canada. **(Recognition for Contribution to Diversity and Inclusion).**

3. Distinguished Diversity Leaders Team Award: The Student Inclusion, Diversity, Equity, and Accessibility Board December 2019.

4. Kameswaran, Vaishnav; Gupta, Jatin; Pal, Joyojeet; **O' Modhrain, Sile;** Veinot, Tiffany; Brewer, Robin; Parameshwar, Aakansha; Yellareddy, V; O'Neill, Jacki. "'We can go anywhere': Understanding 'Independence' through a case study of ride-hailing use by people with visual impairments in metropolitan India". Proceedings of the *Association for Computing Machinery on Human-Computer Interaction*. Volume 2, Issue Computer-Supported Cooperative Work and Social Computing (CSCW), Article 85 (November 2018), pp. 1–24. **(Best Paper Award)**.

5. Russomanno, A., Xu, Z., **O'Modhrain, S**. and Gillespie, R. (2017) "A Pneu Shape Display: Physical Buttons with Programmable Touch Response," in IEEE World Haptics Conference (WHC). **(Best Demonstration Award)**.

6. James T. Neubacher Certificate of Recognition, Council on Disability Concerns, University of Michigan. 2016. Awarded for work on on-line accessibility carried out in conjunction with the Office of Corporate Compliance.

7. Advanced Summer Writing Program Award (UofM), April 2016.

8. Visiting Fellowship, Deutsche Telekom Laboratories, TU, Berlin, Germany, 2008.

9. **S. O'Modhrain** & I. Oakley, "Touch TV: Adding Feeling to Broadcast Media," presented at European Conference on Interactive Television: from Viewers to Actors?, Brighton, England, 2003. **(Best Paper Award).**

10. Stanford Alumni Dissertation Fellowship, 1998-1999.

11. Stanford University Centennial Teaching Award, 1998.

12. Stanford University Graduate Fellowship and Teaching Assistantship, 1998-1999.

13. Fulbright Scholarship, 1994.

14. Citizenship Award, conferred by National Council of the Blind of Ireland (presented by President Mary Robinson), 1991 "For the outstanding achievement by a blind person in the fields of education and employment".

PUBLICATIONS

Note: The names of authors who were students at the time of publication are underlined.

Peer-reviewed Articles

1. Fan, Danyang; Siu, Alexa Fay; Rao, Hrishikesh V.; Sung-Ho Kim, Gene; Vazquez, Xavier; Greco, Lucy; **O'Modhrain, Sile**; and Follmer, Sean. (2023) The Accessibility of Data Visualizations on the Web for Screen Reader Users: Practices and Experiences During COVID-19. *ACM Transactions on Accessible Computing*, 16, 1, Article 4 (March 2023), 29 pages

2. Algargoosh, Alaa; Soleimani, Babak; **O'Modhrain, Sile**; Navvab, Moji. The impact of the acoustic environment on human emotion and experience: A case study of worship spaces. *Building Acoustics Journal*. Volume 29, Issue: 1 (January 2022), pp. 85 – 106.

3. Pandey, Maulishree; Kameswaran, Vaishnav; Rao, Hrishikesh V; **O'Modhrain, Sile;** Oney, Steve. Understanding Accessibility and Collaboration in Programming for People with Visual Impairments. Proceedings of *the Association for Computing Machinery on Human-Computing Interaction*. Volume 5, Issue: Computer-Supported Cooperative Work and Social Computing, Article 129 (April 2021), pp 1-30. **(Recognition for Contribution to Diversity and Inclusion).**

4. Kameswaran, Vaishnav; Gupta, Jatin; Pal, Joyojeet; **O' Modhrain, Sile;** Veinot, Tiffany; Brewer, Robin; Parameshwar, Aakansha; Yellareddy, V; O'Neill, Jacki. We can go anywhere: Understanding Independence through a case study of ride-hailing use by people with visual impairments in metropolitan India. Proceedings of the *Association for*

Computing Machinery on Human-Computer Interaction. Volume 2, Issue: Computer-Supported Cooperative Work and Social Computing, Article 85 (November 2018), pp. 1–24. **(Best Paper Award)**.

5. Morash, Valerie; Russamanno, Alexander; Gillespie, Brent R.; **O'Modhrain, Sile.** "Evaluating approaches to rendering braille text on a high-density pin display," *Institute of Electrical and Electronics Engineers Transactions on Haptics*. Volume 11, Number: 3 (July-September 2018), pp. 476-481.

6. Russamanno, Alexander; **O'Modhrain, Sile;** Gillespie, Brent R.; Rodger, Matthew W.M. Refreshing Refreshable Braille Displays. *Institute of Electrical and Electronics Engineers Transactions on Haptics*. Volume 8, Number: 3 (July-September 2015), pp.287-97.

7. **O'Modhrain, Sile**; Giudice, Nicholas A.; Gardner, John.A.; Legge, Gordon.E. Designing Media for Visually-Impaired Users of Refreshable Touch Displays: Possibilities and Pitfalls. *Institute of Electrical and Electronics Engineers Transactions on Haptics*. Volume 8, Number: 3 (July-Sept 2015), pp. 248-57.

8. Alexander, Robert L.; **O'Modhrain**, **Sile**; Roberts, Aaron D; Gilbert, Jason; Zurbuchen, Thomas H. The Bird's Ear View of Space Physics: Audification as a Tool for the Spectral Analysis of Time Series Data. *Journal of Geophysical Research: Space Physics*. Volume 119, Issue: 7 (July 2014), pp. 5259-71.

9. Rodger, Matthew W.M; **O'Modhrain, Sile;** Craig, Cathy M. Temporal guidance of musicians' performance movement is an acquired skill. *Experimental Brain Research*. Volume 226, Issue: 2 (April 2013), pp. 1-30.

10. Rodger, Matthew W.M.;Craig, Cathy M.; **O'Modhrain, Sile**. Expertise Is Perceived from Both Sound and Body Movement in Musical Performance. *Human Movement Science*. Volume 31, Issue: 5 (October 2012), pp. 1137-50.

11. Zhu, Shaojian; Kuber, Ravi; Tretter, Matthew; **O'Modhrain, Sile.** Identifying the effectiveness of using three different haptic devices for providing non-visual access to the web. *Interacting with Computers*. Volume 23, Issue: 6 (November 2011), pp. 565-81.

12. Kuber, Ravi; Yu, Wai; **O'Modhrain, Sile.** Evaluation of Haptic HTML Mappings Derived from a Novel Methodology. *Association for Computing Machinery's Transactions on Accessible Computing*. Volume 3, Issue: 4, Article 12 (April 2011), pp. 1 - 28.

13. **O'Modhrain, Sile**. A Framework for the Evaluation of Digital Musical Instruments. *Computer Music Journal*, MIT Press. Volume 35, Number: 1 (Spring 2011), pp. 28-42.

14. Essl, Georg; **O'Modhrain, Sile.** An enactive approach to the design of new tangible musical instruments. *Organised Sound*, Cambridge University Press. Volume 11, Issue: 3 (November 2006), pp. 285-96.

15. Farella, Elisabetta; **O'Modhrain, Sile**; Benini, Luca; Riccó, Bruno. Gesture Signatures for Ambient Intelligence Applications: A Feasibility Study. *Pervasive Computing*; Springer, Berlin, Heidelberg. Volume 3968 (May 2006).

16. **O'Modhrain, Sile.** Touch and Go: Designing Haptic Feedback for a Hand-held Mobile Device. *BT Technology Journal*. Volume 22 (2004), pp. 139-45.

17. Woods, Andrew Y; **O'Modhrain, Sile;** Newell, Fiona N. The Effect of Temporal Delay and Spatial Differences on Cross-Modal Object Recognition. *Cognitive, Affective and Behavioural Neuroscience*. Volume 4; Number: 2 (June 2004), pp. 260-9.

18. Gunther, Eric; **O'Modhrain Sile.** Cutaneous Grooves: Composing for the Sense of Touch. *Journal of New Music Research*, Swets & Zietlinger. Volume 32; Issue 4 (December 2003), pp. 369-81.

19. Paradiso, Joseph A; **O'Modhrain, Sile.** Current Trends in Electronic Music Interfaces. *Journal of New Music Research*. Volume 32, Number: 4, pp. 345-49.

Peer-reviewed Conference Papers

1. Danyang Fan, Olivia Tomassetti, Aya Mouallem, Gene S-H Kim, Shloke Nirav Patel, Saehui Hwang, Patricia Leader, Danielle Sugrue, Tristen Chen, Darren Reese Ou, Victor R Lee, Lakshmi Balasubramanian, Hariharan Subramonyam, **Sile O'Modhrain**, and Sean Follmer. 2025. Promoting Comprehension and Engagement in Introductory Data and Statistics for Blind and Low-Vision Students: A Co-Design Study. In CHI Conference on Human Factors in Computing Systems (CHI '25), April 26 - May 1, 2025, Yokohama, Japan. ACM, New York, NY, USA, 20 pages. https://doi.org/10.1145/3706598.3713333

2. S Lee, M Kohga, S Landau, **S O'Modhrain**… -AltCanvas: A Tile-Based Editor for Visual Content Creation with Generative AI for Blind or Visually Impaired People, ASSETS '24: Proceedings of the 26th International ACM SIGACCESS Conference on Computers and Accessibility Article No.: 70, Pages 1 – 22

3. Danyang Fan, Gene S-H Kim, Olivia Tomassetti, Shloke Nirav Patel, **Sile O'Modhrain**, Victor R Lee, Sean Follmer. Tangible Stats: An Embodied and Multimodal Platform for Teaching Data and Statistics to Blind and Low Vision Students, CHI EA '24: Extended Abstracts of the CHI Conference on Human Factors in Computing Systems. Article No.: 310, Pages 1 – 9

4. Seo, J., **O'Modhrain, S**., Xia, Y., Kamath, S., Lee, B., & Coughlan, J. M. (2024). Designing Born-Accessible Courses in Data Science and Visualization: Challenges and Opportunities of a Remote Curriculum Taught by Blind Instructors to Blind Students. In R. S. and A. Firat Elif E. and Laramee (Ed.), EuroVis 2024 - education papers. The Eurographics Association. https://doi.org/10.2312/eved.20241053

5. Baez, Hannah; Bhardwaj, Akshay; Costa, Jean; Gideon, John; **O'Modhrain, Sile**; Sarter, Nadine; and Gillespie, Brent (2023) "Communication is a Two-Way Street: Negotiating Driving Intent through a Shape-Changing Steering Wheel." To appear in Proceedings of the IEEE World Haptics Conference, Delft, The Netherlands, July 10-13, 2023.

6. Pandey, Maulishree; Bondre, Sharvari; **O'Modhrain, Sile**; and Oney, Steve. (2022) "Accessibility of UI Frameworks and Libraries for Programmers with Visual Impairments," 2022 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC), Roma, Italy, 2022, pp. 1-10, doi: 10.1109/VL/HCC53370.2022.9833098.

7. Siu, Alexa; Kim, Gene S-H; **O'Modhrain, Sile;** Follmer, Sean. Supporting Accessible Data Visualization Through Audio Data Narratives. Proceedings of the *Association for Computing Machinery's Conference on Human Factors in Computing Systems*. Article: 476 (April 2022), pp. 1 – 19. New York, NY, USA.

8. Fan, Danyang; Siu, Alexa F.; Law, Adrienne W-S; Zhen, Raymond R.; **O'Modhrain, Sile;** Follmer, Sean. Slide-Tone and Tilt-Tone: 1-DOF Haptic Techniques for Conveying Shape Characteristics of Graphs to Blind Users. Proceedings of the *Association for Computing Machinery's Conference on Human Factors in Computing Systems*. Article: 477 (April 2022), pp. 1 – 19. New York, NY, USA.

9. Fan, Danyang; Siu, Alexa F.; **O'Modhrain, Sile;** Follmer, Sean. Constructive Visualization to Inform the Design and Exploration of Tactile Data Representations. Proceedings of the 22nd *International Association for Computing Machinery's Special Interest Group on ACCESS Conference on Computers and Accessibility*. Article: 60

(October 2020), pp. 1 – 4. New York, NY, USA.

10. Rao, Hrishikesh V; **O'Modhrain**, **Sile**. 2Across: A Comparison of Audio-Tactile and Screen-Reader based Representations of a Crossword Puzzle. Proceedings of the *Association for Computing Machinery's Conference on Human Factors in Computing Systems* (April 2020), pp. 1–12. Honolulu, HI, USA.

11. Pandey, Maulishree; Subramonyam, Hariharan; Sasia, Brooke; Oney, Steve; **O'Modhrain**, **Sile**. Explore, Create, Annotate: Designing Digital Drawing Tools with Visually Impaired People. Proceedings of the *Association for Computing Machinery's Conference on Human Factors in Computing Systems* (April 2020), Pages 1–12. Honolulu, HI, USA.

12. Rao, Hrishikesh V; **O'Modhrain, Sile**. Multimodal Representation of Complex Spatial Data. Proceedings of the *Association for Computing Machinery's Conference on Human Factors in Computing Systems* (May 2019), pp. 1–4. Glasgow, Scotland, UK.

13. Pal, Joyojeet; Vishwanathan, Anandhi; Chandra, Priyank; Kameswaran, Vaishnav; Subramonyam, Hariharan; Johri, Aditya; Ackerman, Mark S; **O' Modhrain, Sile.** Agency in assistive technology adoption: visual impairment and smartphone use in Bangalore. In proceedings of the *Association for Computing Machinery's Conference on Human Factors in Computing Systems* (May 2017) pp. 5959-40. Denver, CO, USA.

14. Subramonyam, Hariharan; Lee, Bongshin; **O'Modhrain, Sile;** Adar, Eytan. Data dialog: facilitating collaborative decision making through data-driven conversations. In Proceedings of PervasiveHealth 11th EAI *International Conference on Pervasive Computing Technologies for Healthcare* (May 2017), pages 440-43. Barcelona, Spain.

15. Russamanno, Alexander; Rao, Hrishikesh V; Tantivirun, T.; **O'Modhrain, Sile;** Gillespie, Brent R. A Tactile Display with Touch Sensing Using a High-Density Microfluidic Chip. In Proceedings of the *Institute of Electrical and Electronics Engineers Haptics Symposium* (March 2018). San Francisco, CA, USA.

16. Russamanno, Alexander; Xu, Zhentao; **O'Modhrain**, **Sile**; Gillespie, Brent R. "A Pneu Shape Display: Physical Buttons with Programmable Touch Response. In Proceedings of the *Institute of Electrical and Electronics Engineers World Haptics Conference* (June 2017). Munich, Germany. **(Best Demonstration Award).**

17. Russamanno, Alexander; **O'Modhrain, Sile;** Gillespie, Brent R.; Burns, Mark. Modeling Latching Fluidic Circuits to Determine Clocking Limits for a Refreshable Braille Display.

In Proceedings of the *Institute of Electrical and Electronics Engineers Haptics Symposium* (April 2016). Philadelphia, PA, USA.

18. Russamanno, Alexandar; Gillespie, Brent R.; **O'Modhrain**, **Sile**; Burns, Mark. The design of pressure-controlled valves for a refreshable tactile display. In Proceedings of the *Institute of Electrical and Electronics Engineers World Haptics Conference* (June 2015). Chicago, IL, USA.

19. Huang, Chuan-Che; Lin, Yu-Jen; Xinda, Jeng; Newman, Mark; **O'Modhrain, Sile.** Olegoru: A Soundscape Composition Tool to Enhance Imaginative Storytelling with Tangible Objects. In Proceedings of the *Association for Computing Machinery's Ninth International Conference on Tangible, Embedded, and Embodied Interaction* (January 2015), pp. 709-14. Stanford, CA, USA.

20. Gillespie, Brent R.; **O'Modhrain, Sile.** Embodied Cognition as a Motivating Perspective for Haptic Interaction Design: A Position Paper. In Proceedings of the *Institute of Electrical and Electronics Engineers World Haptics Conference* (June 2011), pp. 481-486. Istanbul, Turkey.

21. Strachan, Steven; Murray-Smith, Roderick; **O'Modhrain Sile.** BodySpace: Inferring Body Pose for Natural Control of a Music Player. In proceedings of the *Association for Computing Machinery's Conference on Human Factors in Computing Systems* (April 2007), pp. 2001-6. San Jose, CA, USA.

22. Oakley, Ian; **O'Modhrain, Sile**. Tilt to Scroll: Evaluating a Motion-based Vibrotactile Mobile Interface. In Proceedings of the *Institute of Electrical and Electronics Engineers World Haptics Conference* (March 2005), pp. 40-9. Pisa, Italy.

23. Stwephen, Hughes; Oakley, Ian; **O'Modhrain, Sile**. MESH: Supporting Mobile Multi-Modal Interfaces. In proceedings of *the Association for Computing Machinery's User Interface Software and Technology Conference* (2004). Santa Fe, NM, USA.

Peer-reviewed Book Chapters

1. Pandey, Maulishree; Oney, Steve; Bondre, Sharvari; Kameswaran, Vaishnav; Rao, Hrishikesh; and **O'Modhrain, Sile** (2023) "UI Development in Mixed-Ability Software Engineering Teams." in: EDI 2023 (Equity, Diversity, and Inclusion in Software Engineering: Best Practices and Insights)

2. **O'Modhrain, Sile;** Gillespie, Brent R. (2018) "Once More, With Feeling: Revisiting the Role of Touch in Performer-Instrument Interaction." In Papetti, S., and Saitis, C. (eds.) Musical Haptics, Springer Series on Touch and Haptic Systems.

3. **O'Modhrain, Sile** (2016)**.** "Music for Sleeping & Waking Minds: To Sleep, Perchance To Dream." In M. Lyons & A. Refsum Jensenius (eds.) The New Interfaces for Musical Expression Reader, London: Springer, pp. 377-78.

4. **O'Modhrain, Sile;** Essl, Georg. "Tactile Interfaces for Granular Synthesis." In M. Lyons & A. Refsum Jensenius (eds.) The New Interfaces for Musical Expression Reader, London: Springer, pp. 149 – 62.

5. Essl, Georg; **O'Modhrain Sile (2011). "**Perceptual Integration of Audio and Touch: A Case Study of PebbleBox." In S. Serafin (ed.). Sonic Interaction Design, MIT Press.

Lightly-reviewed Conference Papers

1. Siu, Alexa F.; Fan, Danyang Fan; Kim, Gene S-H, Rao, Hrishikesh V; Vazquez, Xavier, **O'Modhrain**, **Sile;** Follmer, Sean. COVID-19 Highlights the Issues Facing Blind and Visually Impaired People in Accessing Data on the Web. In Proceedings of the 18th *International Web for All Conference*. Article Number: 11 (April 2021), pp. 1 - 15.

2. Lin, Yu-Jen; **O'Modhrain, Sile.** Reducing Visual Dependency with Surface Haptic Touchscreens. In Proceedings of *Haptics: Perception, Devices, Control, and Applications*: 10th International Conference, EuroHaptics, Part II 10, Springer International Publishing (July 2016). London, UK.

3. Michon, Romain; Johns; Mishel; **O'Modhrain, Sile;** Gang, Nick; Gowda, Nikhil; Sirkin, David; Chafe, Chris; Wright, Matthew James; Ju, Wendy. A Faust Based Driving Simulator Sound Synthesis Engine. In Proceedings of *Sound and Music Computing* (September 2016). Hamburg, Germany.

4. Sheffield, Eric; **O'Modhrain**, **Sile**; Gould, Michael; Gillespie, Brent R. The Pneumatic Practice Pad. In Proceedings of the *International Conference on New Instruments for Musical Expression* (June 2015). Baton Rouge, LA, USA.

5. Alexander, Robert L.; **O'Modhrain, Sile**; Gilbert, Jason A.; Zurbuchen, Thomas H. Auditory and Visual Evaluation of Fixed-Frequency Events in Time-Varying Signals. In proceedings of the 20th *International Conference on Auditory Display* (June 2014), New

York, NY, USA.

6. Russamanno, Alexander; Gillespie, Brent R.; **O'Modhrain, Sile;** Barber, James. Modeling Pneumatic Actuators for a Refreshable Tactile Display. In Proceedings of *Haptics: Neuroscience, Devices, Modeling, and Applications*: 9th International Conference, EuroHaptics, Part II 9, (June 2014). Versailles, France.

7. Gillian, Nicholas; Knapp, Benjamin; **O'Modhrain, Sile.** Recognition of Multivariate Temporal Musical Gestures Using N-Dimensional Dynamic Time Warping. In Proceedings of *International Conference on New Instruments for Musical Expression* (May 2011). Oslo, Norway.

8. Gillian, Nicholas; Knapp, Benjamin; **O'Modhrain, Sile.** A Machine Learning Toolbox for Musician Computer Interaction. In Proceedings of *International Conference on New Instruments for Musical Expression* (May 2011). Oslo, Norway.

9. Bennett, Mike; McCarthy, Kevin; **O'Modhrain, Sile;** Smyth, Barry. SimpleFlow: Enhancing Gestural Interaction with Gesture Prediction, Abbreviation and Autocompletion. In Proceedings of *INTERACT*. Volume 6946 (2011). Lisbon, Portugal.

10. Heinz, Sebastian; **O'Modhrain, Sile.** Designing a Shareable Musical TUI. In Proceedings of the *International Conference on New Instruments for Musical Expression* (June 2010). Sydney, Australia.

11. Bennett, Peter; **O'Modhrain, Sile.** The BeatBearing: A Tangible Rhythm Sequencer. In Proceedings of the 5th *Nordic Conference on Computer-Human Interaction* (electronic proceedings), (2018). Lund, Sweden.

12. Chuchacz, Katarzyna; Woods, Roger F.; **O'Modhrain, Sile.** Novel Percussive Instrument Design: Converting Mathematical Formulae into Engaging Musical Instruments. In Proceedings of *International Computer Music Conference* (January 2008). Belfast, Northern Ireland.

13. **O'Modhrain, Sile;** Oakley, Ian. Touch TV: Adding Feeling to Broadcast Media. In Proceedings of the *European Conference on Interactive Television*: from Viewers to Actors (December 2003). Brighton, England. **(Best Paper Award).**

14. **O'Modhrain, Sile**; Serafin, Stefania; Chafe, Chris; Smith; Julius O. Influence of attack parameters on the playability of a virtual bowed string instrument: tuning the model. In

Proceedings of the *International Computer Music Conference* (2000). Berlin, Germany.

15. **O'Modhrain, Sile**; Serafin, Stefania; Chafe, Chris; Smith; Julius O. Incorporating Haptic Feedback into Interfaces for Music Applications. In Proceedings of the *International Symposium on Robotics with Applications*, World Automation Conference (June 2000). Maui, HI, USA.

16. Gillespie, Brent R.; **O'Modhrain, Sile**; Tang, Philip; Zaretsky, David; Pham; Cuong. The Virtual Teacher: An Aide for Manual Task Training. In Proceedings of *American Society of Mechanical Engineers' International Mechanical Engineering Conference and Exposition* (November 1998). Anaheim, CA, USA.

17. **O'Modhrain, Sile;** Gillespie, Grent R. The Moose: A Haptic User Interface for Blind Persons. In Proceedings of the *Third WWW-Six Conference* (April 1997). Santa Clara, CA, USA.

MONOGRAPH

O'Modhrain, Sile. "A Dialogue of the Senses: Designing Interaction with the Body In Mind"; (In Press); MIT Press, April 2026
https://mitpress.mit.edu/9780262052399/a-dialogue-of-the-senses/

PATENTS

1. Russomanno, Alexander; Gillespie, Brent R; **O'Modhrain, Sile;** Burns, Mark. "Microfluidic Actuators with Integrated Addressing," United States Patent No. 10,991,269. Issue date, April 27, 2021.

2. Russomanno, Alexander; Gillespie, Brent R; **O'Modhrain, Sile;** Burns, Mark. "Microfluidic Actuators with Integrated Addressing," United States National Phase Application No.: 15/737,195, Filing Date: December 15, 2017.

3. Kuber, Ravi; **O'Modhrain Sile;** Sears, A. "Method and System for Using Haptic Cues to Maintain Levels of Activity," United States Provisional Patent No. 61/286,083 file 12/14/2009, filed, December 14, 2009.

4. **O'Modhrain, Sile;** Essl, Georg. "Particle Based Touch Interaction for Creation of Media Streams," Patent, US 7,427,711 B1, September 23, 2008.

5. **O'Modhrain, Sile;** Oakley, Ian; Hughes, S.; Bradey, A.; Cannon, C. "Creation and display of haptic content for audio & video presentations," Patent, US2006/0061545 A1, March 23, 2006.

6. Hughes, S.; Oakley, Ian; Angesleva, J. and **O'Modhrain, Sile.** "Motion-activated control with haptic feedback," US60/568,59, May 6, 2004.

KEYNOTE TALKS

1. **O'Modhrain, S. (2025)** "From Concept to Codex: The Design and Development of a Multi-Line Braille Display." Keynote Address, World Sight Day conference; Technical University of Dublin, 13 October 2025.

2. **O'Modhrain, S. (2021)** "Should the Braille Font be Refreshed in the Age of Refreshable Braille?" Keynote Address, Crosscutting Challenge Workshop "Using the Skin as a Medium of Communication". IEEE Haptics Symposium, July 6-10, 2021.

3. **O'Modhrain, S. (2021)** "New Technical Devices bring forth new worlds". NSF Workshop on Seamless/Seamful Interfaces, May 2021.

4. **O'Modhrain, S. (2021)** "Malleable Bits and Mutable Atoms: Toward Expressive Representation for Tangible User Interfaces." Keynote Address, Tangible, Embedded and Embodied Interaction, February 2021.

5. **O'Modhrain, S. (2020)** "Malleable Media: Defining Interaction Paradigms for Full-page Tactile Arrays," Keynote Address, Eurohaptics 2020 - 6th September 2020.

6. **O'Modhrain, S. (2017)** "Unnatural selection: Survival in the digital age." TED Talk, TEDxLondonBusinessSchool, London Business School, London, May 2017.

7. **O'Modhrain, S. (2015)** "Once more, with feeling: Revisiting the role of touch in performer-instrument interaction." Keynote Address, International Conference on New Instruments for Musical Expression (NIME 2015), Baton Rouge, June 4-7, 2015.

8. **O'Modhrain, S. (2014)** "Rekindling the Search for the Holy Braille"; Keynote address, IEEE Haptics Symposium 2014, Houston, February 24-26, 2014.

9. **O'Modhrain, S. (2014)** "Music and Movement: Designing Gestural Interfaces for Computer-based Musical Instruments." 8th International Conference on Multimodal

Interfaces (ICMI06). November 2-4, Banff, Canada, 2006.

10. **O'Modhrain, S. (2006)** "Motion and Action, Gesture and Touch" International workshop on Haptic and Audio Interaction Design, Glasgow, August 31-September 1, 2006.

11. **O'Modhrain, S.**, **(2005)** "Gestural Control of Handheld Mobile Devices" International Conference on Perception and Action, Monterey, CA, July 2005.

12. **O'Modhrain, S**. **(2002)** "Reflections on the use of computer-generated haptic feedback in learning tools for the blind." 3rd Congresso Ibero-Americano de Informática na Educação Especial (CIIEE2002) Fortileza, Brazil, August 2002.

INVITED TALKS

1. **O'Modhrain, S. (2025)** From Concept to Codex: The Design and Development of a Multi-Line Braille Display.

2. **O'Modhrain, S. (2023)** Where the Music Is: The Malleable Boundary Between the Tangible and the Audible in DMI Design On-line workshop, The CHIME network (Computer Human Interaction and Music nEtwork), UK. May 2023

3. **O'Modhrain, S. (2022)** Panel member: Putting the "A" in DEIA: Accessibility as a Necessity in the Scholarly Communications Workflow ACR Choice webinar, (sponsored by Elsevier). December 2022

4. **O'Modhrain, S. (2022)** Supporting Spatial Literacy for Blind Learners using Haptic Technology. Michigan AI Symposium, November 2022

5. **O'Modhrain, S. (2020)** CoDesigning a Full-Page Tactile Display: What We Know and What We Don't Know Yet: Keynote presentation, Tutorial on Next Generation of Haptic Devices for XR IEEE IROS: October 25-29, 2020.

6. **O'Modhrain, S. (2019)** "Accessible E-Publications: The User's Perspective." AUPresses 2019, Detroit, MI, June 11-13, 2019.

7. **O'Modhrain, S. (2018)** "Designing a Full-Page Tactile Array: What we Know and What we Don't Know Yet." Visions2019, Ann Arbor Public Library, May 2019.

8. **O'Modhrain, S. (2018)** "Haptic Applications of Assistive Technology for the Visually-Impaired Symposium in Memoriam Valary Morash, Smith Kettlewell Eye Research Institute, San Francisco CA, March 2018.

9. **O'Modhrain, S. (2017)** "Supporting Spatial Literacy for Blind Learners using Haptic Technology" Smart Haptics, San Diego CA, December 2017.

10. **O'Modhrain, S. (2017)** "The Physics of the Violin"; Michigan Theatre, Science on Screen, March 2017.

11. **O'Modhrain, S. (2014)** "The Search for the Holy Braille" Welcome Trust conference on Blindness, Technology, and Multimodal Reading June 27-28, 2014.

12. **O'Modhrain, S. (2004)** "Disappearing Computers or Mutating Machines?" Future and Emerging Technologies, European Commission, November 2004.

INSTALLATION

Essl, G., Bradey, A. and O'Modhrain, S. (2005) "PebbleBox"; Installation for the 'TouchMe' exhibition, Victoria and Albert Museum London, June-August 2005.

EXTERNAL RESEARCH GRANTS

1. **National Institutes of Health: Blind Accessibility Tools (2025-2027):** "TITO: A Touch-In-Touch-Out Tactile Display for Direct Manipulation Digital Interfaces for Blind and Visually Impaired People."
   Level of support: $1,063,343

2. **National Science Foundation: Workplace Equity for Persons with Disabilities in STEM and STEM Education. (2024-2028):** "Collaborative Research: An AudioTactile Data System for Blind or Low Vision Faculty, Staff, Postdocs, and Graduate Students in Chemistry, Math, Computer and Information Sciences."
   Level of support: $741,159

3. **National Science Foundation. Small Business Innovation Research, Phase II (2022-2024):** Microfluidic Technology for Full-Page Digital Braille & Tactile Graphics Display.
   Level of support: $985,343.

4. **National Institutes of Health. Small Business Innovation Research, Phase II (2022-2024**): Microfluidic technology for a full-page braille and graphical tactile display.
   Level of Support: $1,729,548.

5. **National Science Foundation, NSF grant, CyberLearning, 2020-2025:** "Collaborative Research: Learning by Touch: Preparing Blind Students to Participate in the Data Science Revolution."
   Level of support, $328,000.

6. **National Science Foundation NSF Grant, ICorps (2018).** Business accelerator program, to expedite the spin-out of a company to manufacture low-cost microfluidic chips for control of pneumatic actuators.
   Level of Support: $50,000.

7. **National Science Foundation NSF Grant, EAGER (2017-2020),** "Malleable Media": The design and evaluation of a bi-directional microfluidic tactile display.
   Level of support: $300,000.

8. **Faculty Communities on Inclusive Teaching (FCIT), University of Michigan (2017),** "Addressing Under-representation of Women in Performing Arts Technology."
   Level of support: $1,000.

9. **Advance Summer Writing Grant, University of Michigan (2016).**
   Level of support: $500**.**

10. **National Science Foundation NSF Grant, Human-Centered Computing (2013-2018).** To design and evaluate a full-page, fluid-actuated refreshable braille display. NSF Project number 1319922.
    Level of support: $500,000.

11. **M-cubed grant (2013-2015)** "The Holy Braille." Preliminary design and evaluation of a full-page, fluid-actuated refreshable braille display.
    Level of support: $60,000

12. **European Commission 6th Framework IP Skills QUB PI, 2006-2011.** Skills was an Integrated Project that aimed to find techniques for observing, storing, rendering and displaying skilled movements in a number of domains such as surgery, industrial applications and music.
    Level of support: €286,000.

13. **European Commission 6th Framework NOE Enactive, 2004-2008.** Enactive was a Network of Excellence in EU IST Priority Multimodal Interfaces that explored the role of action in interaction design.
    Level of support: €120,000.

14. **Science Foundation Ireland (SFI), 2003.** Conference/Workshop grant awarded to support the costs of Eurohaptics 2003.
    Level of support: €35,000.

15. **Stanford University, 1995.** Office of Technology Licensing at Stanford, project grant to develop a haptic user interface for the blind.
    Level of support: $13,000.

TEACHING

2011 - Present	PAT102 – Introduction to Acoustics and Psychoacoustics (Core Requirement for PAT undergraduates)
2011 - Present	PAT515/SI515 – Engineering Applications of Performing Arts Technology: Movement for Interaction Design (Core Requirement for PAT graduate students)
2013 - Present	PAT421-PAT521/SI521 – Advanced Psychoacoustics (Elective, fulfills ULWR)
2012 - Present	PAT424-PAT524/SI524 – A Dialogue of the Senses (Elective)

PH.D. SUPERVISION

At University of Michigan

1. Hrishikesh Rao, Supervisor, 2024. “Audio-tactile tools to support non-visual presentation of information for BVI students”.

2. Vaishnav Kameswaran, Co-Supervisor, 2024. “Understanding the helping-related interactions of people with visual impairments in India”.

3. Alex Russamanno, Co-Supervisor, 2017. "Model-based Microfluidic Device Design for Refreshable Braille and Tactile Graphics".

4. Robert Alexander, Co-supervisor, 2016. “"The Bird’s Ear View: Audification for the Spectral Analysis of Heliospheric Time Series Data".

At Queens’ University Belfast

1. Nicholas Ward, Primary Supervisor, 2013. "Effortful Interaction: A New Paradigm for the Design of Digital Musical Instruments".

2. Nicholas Gillian, Primary Supervisor, 2011. "Gesture Recognition for Musician Computer Interaction".

3. Matthew Rodger, Primary Supervisor, 2010. "The Role of Musicians' Body Movements in Musical Skill Acquisition".

4. Peter Bennett, Primary Supervisor, 2010. “The Representation and Control of Time in Tangible User Interfaces".

5. Katarzyna Chuchacz, Primary supervisor, 2009. "Real-time, hardware implementation and musical interface design for a percussion instrument based on a physical model".

6. Philip Strain, Primary Supervisor, 2009. "The Design and Evaluation of an Assistive Multimodal Interface".

7. Ravi Kuber, Primary Supervisor, 2008. "Developing an assistive haptic framework for improving non-visual access to the web".

8. Emma Murphey, Primary Supervisor, 2007. "Designing Auditory Cues for a Multimodal Web Interface: A Semiotic Approach".

POSTDOCTORAL SUPERVISION

1. Ian Oakley, Media Lab Europe, 2002-2004
2. Georg Essl, Media Lab Europe, 2003-2005
3. Johan Issartel, Queen’s University Belfast, 2007-2009

MENTORING

1. Faculty Mentor, Robin Brewer. 2021-2023.
2. Faculty Mentor, John Granzow. 2018-2021. Tenured in May 2021.

INTERNAL SERVICE

University of Michigan's School of Information

Served on four third-year faculty review committees. 2015 - Present.

University of Michigan's School of Music, Theater & Dance

1. Chair of Department of Performing Arts Technology. 2023 – 2025.

2. Representative and Alternate on the Faculty Council for Graduate studies. 2011-present.

3. Representative and Alternate on the Council of Departmental Representatives. 2011-present.

4. Served on four tenure and 3rd year review committees for Department of Performing Arts Technology (PAT) faculty members. 2011-present.

5. Serve as faculty adviser for approximately 15 undergraduates in PAT every year. 2011-present.

6. Faculty supervisor for Resonance, a student-lead initiative that foregrounds the work of women and non-binary artists in PAT. 2016-2018.
7. Faculty Leading Change Program: Addressing the Gender Imbalance in PAT. 2016-2017.

8. Established the PAT Seminar Series and lead it between 2015-2017.

9. Member, four Search committees for PAT faculty hires. 2014-present.

10. Member, SMTD Scholarship Committee. 2013-2016.

University of Michigan

1. Invited contributor, Kellogg Eye Center Vision Rehabilitation Strategic Planning Retreat, May 2023

2. Member, U-M Library Council. 2017-2022.

3. Invited member, Student Idea Board, a provost-initiated campus-wide group that spent six months reviewing the experiences of students with disabilities on campus. 2019.

EXTERNAL SERVICE

Professional Activities

1. External reviewer, Department of Music, University of Virginia. Fall 2025

2. Promotion and Tenure reviews : 2008-present: I write on average four confidential letters for promotion and tenure for internal and external candidates at all levels each year.

3. Co-organizer and Faculty Member, SKERI Summer Institute program: 2022-present: Co-organize and Co-teach an annual summer school for professional blind data scientists hosted by the Smith-Kettlewell Eye Research Institute.

4. Member, MathWorks Customer Accessibility Advisory Board. 2022-present.

5. Regular reviewer for Association of Computing Machinery's Special Interest Groups in Computer Human Interaction, Computer-Supported Cooperative Work and Social Computing, User Interface Software and Technology, and Designing Interactive Systems. 2020 – present.

6. Panelist, various, National Science Foundation. 2015-present.

7. Reviewer, Conference on New Instruments for Musical Expression. 2015 – present.

8. Ad Hoc reviewer, National Institutes of Health. 2016-present.

9. Program committee member and reviewer, Tangible, Embedded, and Embodied Interaction. 2009 – present.

10. Expert reviewer, European Commission. 2002 – present.

11. Program Committee, Eurohaptics. 2002 – present.

12. (Ongoing) Reviewer for: Transactions on Computer-Human Interaction, Transactions on Accessible Computing, Transactions on Haptics, Transactions on Applied Perception.

13. Co-chair, Doctoral Student Consortium, Conference on Tangible, Embedded and Embodied Interaction. 2021.

14. Sight Tech Global. Chair, Invited panel: Augmented Reality and Perception. 4th December 2020.

15. Co-organizer, Conference on New Instruments for Musical Expression. Ann Arbor, Michigan. 2012.

16. Treasurer, ACM Conference on Tangible and Embedded Interaction, Madeira. 2011.

17. External Reviewer/Examiner, MA in Interaction Design, National University of Ireland at Galway, Ireland. 2009 – 2011.

18. National Delegate from Ireland for EU Cost287 Coordinated Action on the Control of Gestural Audio Systems. 2003 – 2007.

19. Co-host, Eurohaptics03, the 3rd European Conference on Haptics with Fiona Newell, Dublin, Ireland. 2003.

20. Program Committee, Conference on New Instruments for Musical Expression. 2002 – 2015.

21. Organizer, Conference on New Instruments for Musical Expression. Dublin, Ireland. 2002.

Boards and Committees

1. Member, MathWorks Customer Accessibility Advisory Board. 2022-Present.

2. Jury member Holman Prize, Lighthouse for the Blind of San Francisco. 2019.
3. Member, Advisory Board, Diagram Center. Palo Alto. 2014-2020.

Community Service

1. Member, Condo Board. 2020 – present.

2. Accessible Research and Teaching Tools Project – developing a website and back-end database on the model of AppleVis as a community resource for blind academics to share information about the accessibility of the tools they are required to use. 2020 – present.

3. Blind Academics – during Covid, I hosted weekly zoom meetings to share information relating to accessibility challenges around on-line teaching. 2020-2021.

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

1. Member, Institute of Electronic and Electrical Engineers
2. Member, Association of Computing Machines