Juliette Regimbal

Education

2021–Present **Ph.D. Electrical Engineering**, *McGill University*, Montréal QC
Research focused on audio-haptic authoring tools and web accessibility for blind and low-vision people. Supervised by Professor Jeremy Cooperstock in the Shared Reality Lab.

2020–2021 **M.Sc. Electrical Engineering***, *McGill University*, Montréal QC
Degree not completed due to fast tracking into a doctoral program.

2015–2020 **B.Eng. Computer Engineering**, *McGill University*, Montréal QC

Experience

Vocational

2021–Present **Architecture Lead**, *IMAGE Project, McGill University*
Person responsible for software architecture design for the IMAGE project. After working on the initial design and implementation of the system, I researched and produced technical documents specifying new system-level functionality and checked implementations produced by other team members. I provided informal technical and research mentorship to other graduate students, interns, and undergraduate students.

Fall 2020–24 & Winter 2021–25 **Teaching Assistant/Grader**, McGill University
Teaching assistant and grader for the Human Computer Interaction, Embedded Systems, Haptics, and Parallel Computing courses. My tasks included grading, writing assessments, creating lessons, instructing students, project mentorship, and learning outcome formulation and alignment.

January–December 2020 **Independent Consultant**, *Measuring Polyphony*
Software developer for the Measuring Polyphony project directed by Professor Karen Desmond. Tasks focused on development of the Measuring Polyphony Editor for human entry of 16th/17th century mensural-notation music from an existing manuscript available via the International Image Interoperability Framework.

2018–2020 **Casual Research Assistant**, *Schulich School of Music*, Montréal QC
Software developer for the *Single Interface for Music Score Searching and Analysis* project at the Distributed Digital Music Archives and Libraries Lab directed by Professor Ichiro Fujinaga. Specifically working on corrections in optical music recognition by contributing to Verovio, an open-source music engraving software, and developing the online square-notation music editor Neon.

May–June 2016 **Stagiaire**, *Matrox Electronic Systems Ltd.*, Dorval QC
Worked in Video Products Group with software engineers towards the release of a new version of their SDK, and on new features for later versions.

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Miscellaneous

July 2024 **Student Volunteer**, *Eurohaptics Conference*, Lille, France
Assisted with setting up materials and presentations, attendee registration, and miscellaneous tasks.

2022–Present **Union Delegate**, *AGSEM-CSN*, Montréal QC
Teaching assistant delegate for the Department of Electrical and Computer Engineering in the Association of Graduate Students Employed at McGill. Activities included mobilization, website administration, and member data management.

2021–24 **Paper Reviewer**, *Various*
Reviewer of demo papers (1 page each) at the 2021 IEEE World Haptics Conference in 2021, and of technical papers at the 2021 New Interfaces in Musical Expression Conference, the 2022 Music Encoding Conference, the 2024 Eurohaptics Conference, the 2025 ACM CHI conference, and the 2025 IEEE World Haptics Conference.

Awards

2024 Best Poster at EuroHaptics for "Investigating Haptic Co-Creation with Reinforcement Learning" [1]

2022–2026 Doctoral research award, Fonds de recherche du Québec – Nature et technologies, no. 315050

2022–2025 Canada Graduate Scholarship (Doctoral), National Sciences and Engineering Research Council of Canada, no. 569236

2021–2025 Vadasz Fellowship, McGill Engineering Doctoral Award

Computer skills

Programming Languages: JavaScript/Typescript, Python, Java, C/C++, SuperCollider, Rust, Pure Data

Familiar with: UNIX-like system administration (especially Linux), Docker, Web Services, Scrum-style Agile, Microcontrollers, and Git

Projects

2024–2025 **Reinforcement Learning for Audio-Haptic Authoring**, *Ph.D. Research*
This project sought to create and evaluate a reinforcement learning agent as part of a haptic and audio-haptic co-creative authoring tool. The agent encourages designers to pursue new ideas by taking actions developed through user feedback, helping to avoid situations where a design direction is chosen without deeper consideration.

2023–Present **Haptic Authoring Toolbox**, *Ph.D. Research*
The Haptic Authoring Toolbox, or HAT Box, is a public, open-source repository of information on authoring tools for haptic effects, including vibrotactile, force feedback, skin stretch, and temperature. The goal of the project is to help haptics practitioners, primarily students, find useful resources for their purposes and understand the variety of approaches to authoring taken by other practitioners.

2021–Present **Internet Multimodal Access to Graphical Exploration (IMAGE)**, *Ph.D. Research*

IMAGE is a project to develop systems to automatically produce rich representations of web graphics, such as photographs, maps, and charts, that are accessible to blind and low-vision people, primarily through spatialized sonifications and haptic feedback. My role has primarily focused on the system architecture, and the design and implementation of sonifications and haptic feedback.

2020–2021 **Becoming**, *Operatic VR Experience*

Becoming is a virtual reality experience based on a poem by Rumi. The work cycles across scales of life and matter, starting at the size of molecules and moving up through plants and animals to cities and stars. While graphics and spatialized audio are heavily featured in *Becoming*, there are also vibrotactile effects rendered across the body in response to interactions and thematic events. My role was to design and implement these effects in collaboration with the main team at the Sonic Arts R&D Group, UC San Diego.

2019 **OR and ICU Haptic Alarms**, *B.Eng. Capstone Project*

The high amount of noise in hospital environments caused by medical alarms is detrimental to both clinicians and patients. Reducing this noise could greatly improve the well-being of clinicians and medical outcomes for patients. The project sought to do this by developing a haptic display using one vibrotactile actuator capable of conveying the states of three vital signs continuously and in parallel. Supervised by Professor Jeremy Cooperstock.

Publications

[1] J. Regimbal and J. R. Cooperstock, "Investigating Haptic Co-creation with Reinforcement Learning," en, in *Haptics: Understanding Touch; Technology and Systems; Applications and Interaction*, vol. 14769, Springer Nature Switzerland, 2025, pp. 448–454. DOI: 10.1007/978-3-031-70061-3_37.

[2] J. Regimbal, J. R. Blum, C. Kuo, and J. R. Cooperstock, "IMAGE: An Open-Source, Extensible Framework for Deploying Accessible Audio and Haptic Renderings of Web Graphics," en, *ACM Transactions on Accessible Computing*, vol. 17, no. 2, pp. 1–17, Jun. 2024, ISSN: 1936-7228, 1936-7236. DOI: 10.1145/3665223.

[3] J. Regimbal, J. R. Blum, and J. R. Cooperstock, "IMAGE: A Deployment Framework or Creating Multimodal Experiences of Web Graphics," en, in *Proceedings of the 19th International Web for All Conference*, Lyon France: ACM, Apr. 2022, pp. 1–5, ISBN: 978-1-4503-9170-2. DOI: 10.1145/3493612.3520460.

[4] S. Yadegari, J. Burnett, E. Murakami, *et al.*, "Becoming: An Interactive Musical Journey in VR," en, in *Special Interest Group on Computer Graphics and Interactive Techniques Conference Immersive Pavilion*, Vancouver BC Canada: ACM, Aug. 2022, pp. 1–2, ISBN: 978-1-4503-9369-0. DOI: 10.1145/3532834.3536209.

[5] H. Elbaggari, R. Guerra, S. Knappe, and J. Regimbal, "Crescendo: Haptic exploration of scores for novice musicians with dyslexia," in *2021 IEEE World Haptics Conference (WHC)*, IEEE, Jul. 2021. DOI: 10.1109/whc49131.2021.9517205.

[6] J. Regimbal and M. M. Wanderley, "Interpolating audio and haptic control spaces," in *NIME 2021*, Shanghai, China: PubPub, Jun. 2021. DOI: 10.21428/92fbeb44.1084cb07.

[7] Y. Yoo, J. Regimbal, and J. R. Cooperstock, "Identification and information transfer of multi-dimensional tactons presented by a single vibrotactile actuator," in *2021 IEEE World Haptics Conference (WHC)*, IEEE, Jul. 2021. DOI: 10.1109/whc49131.2021.9517169.

[8] J. Regimbal, N. Radi, A. Weill-Duflos, and J. R. Cooperstock, "Single-actuator simultaneous haptic rendering for multiple vital signs," in *HCI International 2020 - Late Breaking Papers: Multimodality and Intelligence*, Copenhagen, Denmark, 2020. DOI: 10.1007/978-3-030-60117-1_19.

[9] J. Regimbal, G. Vigliensoni, C. Hutnyk, and I. Fujinaga, "IIIF-based lyric and neume editor for square-notation manuscripts," in *Music Encoding Conference Proceedings 2020*, Jul. 22, 2020, pp. 15–18. DOI: 10.17613/d41w-n008.

[10] J. Regimbal, Z. McLennan, G. Vigliensoni, A. Tran, and I. Fujinaga, "Neon2: A verovio-based square-notation editor," Music Encoding Conference 2019, University of Vienna, Vienna, Austria, May 31, 2019.