Juliette Regimbal

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Education

2021–Present **Ph.D. Electrical Engineering**, *McGill University*, Montréal QC
Human-computer interaction research focused on software to design touch effects, and web accessibility for blind people. Supervised by Jeremy Cooperstock in the Shared Reality Lab.

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

Skills

Education	Active learning, Flipped classroom, Understanding by design, Universal design for learning
Programming	JavaScript, Python, HTML/CSS, Java, C/C++, SuperCollider, Rust, Pure Data
Software Topics	Networking, Linux system administration, Docker/Containerization, iptables/ufw, Web services, Web development, Node.js, PyTorch, LangChain, OpenStack, Proxmox, Android development, SQL, noSQL, Scrum-style Agile, Microcontrollers, and Git
Research Methods	Human-centered design, Semi-structured interviewing, Protocol analysis, Focus group, Co-design, Persona creation, Reflexive thematic analysis, Mann-Whitney test, Two one-sided t-tests
Languages	English (native), French (professional)

Experience

Teaching

2020–2025 **Teaching Assistant/Grader**, McGill University
- TA in Human-Computer Interaction, Embedded Systems, Haptics, Parallel Computing.

Various **Guest Lectures**
- Interactive lectures on haptics for McGill's Human-Computer Interaction course, 2022–2024.

2023 **FACC 511 - Instructional Design for Engineering Education**, McGill University
- Optional course on engineering pedagogy.

Professional

2021–Present **Architecture Lead**, *IMAGE Project, McGill University*
- Designed and implemented distributed system architecture with Docker, Python, Typescript.
- Designed and reviewed implementation of new user-facing functionality into the system.
- Collaboration with other developers and HCI researchers, mentorship of interns.

2020–2025 **Teaching Assistant/Grader**, McGill University
TA for Human-Computer Interaction, Embedded Systems, Haptics, and Parallel Computing.

2020 **Independent Consultant**, *Measuring Polyphony*
- Developed the Measuring Polyphony Editor using Typescript, Angular.
- Iteratively designed and tested features based on musicologists' needs.
- Editor is actively used by musicologists studying 16th and 17th century music as of 2025.

2018–2020 **Casual Research Assistant**, *McGill University*, Montréal QC
- Worked with musicologist stakeholders to build applications for optical music recognition.
- Primarily contributed to Verovio (C++) and Neon (Typescript).
- Maintained various server-side applications written in Python, running on OpenStack.

Summer 2016 **Stagiaire**, *Matrox Electronic Systems Ltd.*, Dorval QC

Research Projects

2025–Present **Off-the-shelf LLMs for Haptic Design in Video Games**, *Mixed Methods*
- Open-weight generative AI (Llama 3.2 and Audiogen) to create vibrotactile haptic effects.
- Conducted a workshop with video game students using the AI to design effects for a game.
- Determined that AI effects are plausible, but naive users require extra guidance for success.

2024–Present **Reinforcement Learning for Audio-Haptic Authoring**, *Qualitative*
- Human-AI interaction in haptic, audio-haptic design.
- Designed agents to encourage users to explore ideas through semi-autonomous actions.
- Identified factors to improve the support provided by this type of co-creative agent.

2023–Present **Haptic Authoring Toolbox**, *Mixed Methods*
- Developed an open-source repository of information on authoring tools for haptic effects.
- Evaluated and improved the repository through user testing and semi-structured interviews.
- Results help practitioners plan novel research and identify suitable existing tools.

2021–Present **Internet Multimodal Access to Graphical Exploration**, *Qualitative*
- IMAGE aims to automatically produce rich representations of web graphics for blind people.
- Designed and implemented the system based on practitioner and user needs.
- Designed and implemented the system server (Docker, Node.js, Python) and client (Typescript).
- Created representations of visual information using touch, sound.
- Refined the system through interviews with team members.
- Resulting system has been in production for years, extended to new applications.

2020–2021 **Becoming**, *Operatic VR Experience*
- *Becoming* was a virtual reality experience (Unreal Engine) based on a poem by Rumi.
- Designed and implemented haptic effects in C++ and C# that correspond with immersive visuals and music.
- Collaboration with engineers and musicians at the Sonic Arts R&D Group, UC San Diego.

2019–2020 **OR and ICU Haptic Alarms**, *Quantitative*
- Designed haptic (vibration) alarms for use in high-noise environments (e.g., OR, ICU).
- Developed an android application to simulate alarms and collect data in a study.

Awards

2024 Best Poster, EuroHaptics, [2]

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

2022–2025 CGS (Doctoral), Natural Sciences and Engineering Research Council of Canada, no. 569236

2021–2025 Vadasz Fellowship, McGill Engineering Doctoral Award

Publications and Patents

[1] J. Cooperstock, A. Weill-Duflos, J. Regimbal, *et al.*, *Methods and systems for controlling a haptic display*, US Patent 12,373,032, Jul. 2025.

[2] 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.

[3] 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.

[4] 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.

[5] 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.

[6] 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.

[7] 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.

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

[9] 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.

[10] 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.

[11] 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.