

# Vincent Lévesque

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## LANGUAGES

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**English:** Fluent, **French:** Native

## EDUCATION

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- 2009      **Ph.D. in Electrical Engineering**, McGill University, Montréal, Canada  
Thesis: Virtual Display of Tactile Graphics and Braille by Lateral Skin Deformation  
Advisor: Vincent Hayward
- 2003      **M.Eng. in Electrical Engineering**, McGill University, Montréal, Canada  
Thesis: Measurement of Skin Deformation Using Fingerprint Feature Tracking  
Advisor: Vincent Hayward  
(Dean's Honour List)
- 2000      **B.Eng. in Computer Engineering**, McGill University, Montréal, Canada  
(Dean's Honour List)

## PROFESSIONAL EMPLOYMENT

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- 2017-      **École de technologie supérieure**, Montréal, Canada  
Assistant Professor, Dept. of Software and IT Engineering
- 2016-2017      **Feel Forward Haptics inc.**, Montréal, Canada  
Founder and President
- 2016-2017      **Tactile Labs inc.**, Montréal, Canada  
Research Scientist (volunteer)
- 2015-2016      **Immersion Corporation**, Research Department, Montréal, Canada  
Senior Research Scientist
- 2012-2015      Research Scientist II
- 2011-2012      Postdoctoral Research Scientist
- 2009-2011      **University of British Columbia**, Computer Science Department, Vancouver, Canada  
Postdoctoral Researcher (Advisor: Karon MacLean)
- 2009-2011      **Tactile Labs inc.**, Montréal, Canada  
Vice-president
- 2008-2009      President
- 2003      **Visuaide Inc.**, Longueuil, Canada  
Research Assistant

## **AWARDS AND DISTINCTIONS**

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2016	<b>Best Reviewer Award</b> , ACM ICMI 2016, Tokyo, Japan
2013	<b>Citation for Meritorious Service</b> , IEEE Transactions on Haptics
2012	<b>Best Paper Award</b> (1 <sup>st</sup> author), IEEE Haptics Symposium 2012, Vancouver, Canada
2011	<b>Best Paper Award</b> (1 <sup>st</sup> author), ACM CHI'11, Vancouver, Canada
2011	<b>Citation for Meritorious Service</b> , IEEE Transactions on Haptics
2010	<b>Best Reviewer Award</b> , IEEE Haptics Symposium 2010, Waltham, USA
2008	<b>Best Demonstration Award</b> (1 <sup>st</sup> author), IEEE Haptics Symposium 2008, Reno, USA
2007	<b>Best Paper Award for Haptic Application</b> (1 <sup>st</sup> author), IEEE World Haptics Conference 2007, Tsukuba, Japan
2006	<b>Best Paper Award</b> (5 <sup>th</sup> author), ACM CHI'06, Montréal, Canada
2004	<b>3rd Prize for Best Poster</b> (1 <sup>st</sup> author), Institute for Robotics and Intelligent Systems (IRIS), Ottawa, Canada
2003	<b>Dean's Honour List</b> , Master of Engineering, McGill University
2002	<b>Best Demonstration Award</b> , (1 <sup>st</sup> author), Institute for Robotics and Intelligent Systems (IRIS), Calgary, Canada
1996-1999	<b>Dean's Honour List</b> , Bachelor of Engineering, McGill University

## **GRANTS**

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2018-2023	<b>Discovery Grant</b> (\$26,000/yr), Natural Sciences and Engineering Research Council of Canada (NSERC)
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## **FELLOWSHIPS AND SCHOLARSHIPS**

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2011-2013	<b>Industrial R&amp;D Fellowship</b> (\$20,000/yr), Natural Sciences and Engineering Research Council of Canada (NSERC)
2009-2011	<b>Postdoctoral Fellowship PDF</b> (\$40,000/yr), Natural Sciences and Engineering Research Council of Canada (NSERC)
2003-2006	<b>Postgraduate Scholarship B2</b> (\$20,000/yr), Fonds pour la Formation de Chercheurs et l'Aide à la Recherche (FCAR)
2003-2005	<b>Postgraduate Scholarship PGS B</b> (\$21,000/yr), Natural Sciences and Engineering Research Council of Canada (NSERC)
2002-2005	<b>Precarn Student Scholarship</b> (\$6,000), Institute for Robotics and Intelligent Systems
2001-2002	<b>Postgraduate Scholarship PGS A</b> (\$17,300/yr), Natural Sciences and Engineering Research Council of Canada (NSERC)
1996-1999	<b>Hugh Brock / E.M. Wilson Scholarship</b> (\$2,000/yr), McGill University

## TEACHING EXPERIENCE

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- 2018            **Professor**, École de technologie supérieure, Montréal, Canada  
*GTI745 Interfaces utilisateurs avancées*
- 2010-2017    **Guest Lecturer**, Mathematics and Industrial Engineering, Ecole Polytechnique de Montréal, Montréal, Canada  
*Guest lecture on haptics (3 or 6 hours, yearly) during graduate course on Specialized Human-Computer Interfaces (instructor: Jean-Marc Robert)*
- 2015            **Innovation Instructor**, Immersion Corporation, Montréal, Canada  
*Co-instructor for training session on the Innovator's DNA method*
- 2000-2003    **Teaching Assistant**, Electrical Engineering, McGill University, Montréal, Canada  
*Computer Architecture Laboratory (6 semesters) and Operating Systems (1 semester)*

## GRADUATE SUPERVISION

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- 2018-            **Supervisor**, Baptiste Lestavel, M. Eng., École de technologie supérieure
- 2010-2011    **Co-supervisor (unofficial)**, Louise Oram, Undergraduate Research, University of British Columbia

## PUBLICATIONS

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### Journal Articles

*Impact factors by Journal Citation Reports 2014.*

- [J1]    M. Adams, S. Johnson, P. Lefèvre, **V. Lévesque**, V. Hayward, T. André, T., J-L. Thonnard (2013). Finger pad friction and its role in grip and touch. *Journal of the Royal Society Interface*, 10(80):20120467. (Impact factor: 3.917)
- [J2]    T. André, **V. Lévesque**, V. Hayward, P. Lefèvre, J.-L. Thonnard (2011). Effect of skin hydration on the dynamics of fingertip gripping contact. *Journal of the Royal Society Interface*, published online 13 April 2011. (Impact factor: 3.917)
- [J3]    G. Petit, A. Dufresne, **V. Lévesque**, V. Hayward (2008). Exploration multimodale d'images pour des utilisateurs ayant une déficience visuelle. *Sciences et Technologies pour le Handicap*, 2(2):175-186.
- [J4]    J. Pasquero, J. Luk, **V. Lévesque**, Q. Wang, V. Hayward, K. E. MacLean (2007). Haptically Enabled Handheld Information Display with Distributed Tactile Transducer. *IEEE Transactions on Multimedia*, 9(4):746-753. (Impact factor: 2.303)
- [J5]    **V. Lévesque**, J. Pasquero, V. Hayward, and M. Legault (2005). Display of Virtual Braille Dots by Lateral Skin Deformation: Feasibility Study. *ACM Transactions on Applied Perception*, 2(2):132-149. (Impact factor: 0.652)

### Peer-Reviewed Conference Papers

- [C1]    P. Strohmeier, J. Burstyn, J. P. Carrascal, **V. Lévesque** and R. Vertegaal (2016). ReFlex: A Flexible Smartphone with Active Haptic Feedback for Bend Input. In *Proc. ACM Conference on Tangible, Embedded and Embodied Interaction (TEI'16)*, Eindhoven, The Netherlands, February 2016. **More than one million views on YouTube.**

- [C2] **V. Lévesque**, L. Oram, K. MacLean (2012). Exploring the Design Space of Programmable Friction for Scrolling Interactions. In *Proc. Haptics Symposium 2012*, Vancouver, Canada, March 2012. **Best Paper Award**.
- [C3] **V. Lévesque**, L. Oram, K. MacLean, A. Cockburn, N. D. Marchuk, D. Johnson, J. E. Colgate, M. A. Peshkin (2011). Enhancing Physicality in Touch Interaction with Programmable Friction. In *Proc. ACM Conference on Human Factors in Computing Systems (CHI'11)*, pp. 2481-2490, Vancouver, Canada, May 2011. **Best Paper Award**. *Acceptance rate: 27%*.
- [C4] **V. Lévesque**, L. Oram, K. MacLean, A. Cockburn, N. D. Marchuk, D. Johnson, J. E. Colgate, M. A. Peshkin (2011). Frictional Widgets: Enhancing Touch Interfaces with Programmable Friction. In *CHI'11 Extended Abstracts on Human Factors in Computing Systems*, pp. 1153-1158, Vancouver, Canada, May 2011. *Acceptance rate: 50%*.
- [C5] **V. Lévesque** and V. Hayward (2010). Laterotactile Rendering of Vector Graphics with the Stroke Pattern. In *Proc. EuroHaptics 2010, Part II*, Kappers, A.M.L. et al. (Eds.), LNCS 6192, Springer-Verlag, pp. 25-30, Amsterdam, Netherlands, July 2010.
- [C6] G. Petit, A. Dufresne, **V. Lévesque**, V. Hayward, N. Trudeau (2008). Refreshable Tactile Graphics Applied to Schoolbook Illustrations for Students with Visual Impairment. In *Proc. 10th international ACM SIGACCESS conference on computers and accessibility (ASSETS'08)*, pp. 89-96, Halifax, Canada, October 2008. *Acceptance rate: 37%*.
- [C7] G. Petit, A. Dufresne, **V. Lévesque**, V. Hayward, N. Trudeau (2008). Graphisme tactile appliqué aux illustrations de manuels scolaires à l'usage d'enfants ayant une déficience visuelle. In *Proc. 20ième conférence francophones sur l'interaction homme-machine (IHM'08)*, Metz, France, Septembre 2008.
- [C8] **V. Lévesque** and V. Hayward (2008). Tactile Graphics Rendering Using Three Laterotactile Drawing Primitives. In *Proc. Haptics Symposium 2008*, pp. 429-436, Reno, Nevada, March 2008.
- [C9] **V. Lévesque**, J. Pasquero, and V. Hayward (2007). Braille Display by Lateral Skin Deformation with the STReSS<sup>2</sup> Tactile Transducer. In *Proc. World Haptics Conference 2007*, pp. 115-120, Tsukuba, Japan, March 22-24, 2007. **Best Paper Award for Haptic Application**.
- [C10] Q. Wang, **V. Lévesque**, J. Pasquero, and V. Hayward (2006). A Haptic Memory Game using the STReSS<sup>2</sup> Tactile Display. In *CHI'06 Extended Abstracts on Human Factors in Computing Systems*, pp. 271-274, Montréal, Canada, April 2006. *Acceptance rate: 23%*.
- [C11] J. Luk, J. Pasquero, S. Little, K. MacLean, **V. Lévesque**, and V. Hayward (2006). A Role for Haptics in Mobile Interaction: Initial Design Using a Handheld Tactile Display Prototype. *Proc. ACM Conference on Human Factors in Computing Systems (CHI'06)*, pp. 171-180, Montréal, Canada, April 2006. **Best Paper Award**. *Acceptance rate: 23%*.
- [C12] J. Pasquero, **V. Lévesque**, V. Hayward, and M. Legault (2004). Display of Virtual Braille Dots by Lateral Skin Deformation: A Pilot Study. In *Proc. EuroHaptics 2004*, pp. 96-103, Munich, Germany, June 5-7, 2004.
- [C13] **V. Lévesque** and V. Hayward (2003). Experimental Evidence of Lateral Skin Strain During Tactile Exploration. In *Proc. Eurohaptics 2003*, pp. 261-275, Dublin, Ireland, June 2003.

## **Non-Refereed Contributions**

- [N1] **V. Lévesque**, L. Oram, K. MacLean, J. E. Colgate, M. A. Peshkin (2011). Restoring Physicality to Touch Interaction with Programmable Friction. In *Proc. International Conference on Consumer Electronics 2011 (ICCE'11)*, Las Vegas, IEEE, 2 pages, January 2011.
- [N2] T. André, **V. Lévesque**, V. Hayward, P. Lefèvre and J.-L. Thonnard (2009). The effects of moisture on fingertip skin deformation during loading and slipping. 39th Annual Meeting of the Society for Neuroscience, Chicago, USA, 2009.
- [N3] **V. Lévesque**, V. Hayward, G. Petit, and A. Dufresne (2008) Refreshable tactile graphics using a lateral skin deformation device. 9th International Conference on Low Vision, July 7-11, Montréal, Canada.
- [N4] **V. Lévesque** (2005). Blindness, Technology and Haptics. Technical Report (CIM-TR-05.08), McGill University, Montréal, Canada, 28 pages.
- [N5] **V. Lévesque**, J. Pasquero, V. Hayward, and M. Legault (2004). Display of Virtual Braille Dots by Lateral Skin Deformation. Poster, 14th Annual Canadian Conference on Intelligent Systems (IRIS), Ottawa, Canada, June 2004. *3rd Prize, Best Poster Award.*

## **Demonstrations**

- [D1] **V. Lévesque**, L. Oram and K. MacLean (2012). Programmable Friction in Scrolling Interactions. Haptics Symposium 2012, Vancouver, Canada, March 2012. *Nominated for Best Demonstration Award.*
- [D2] **V. Lévesque** and V. Hayward (2008). Refreshable Tactile Graphics with the STReSS<sup>2</sup> Laterotactile Display. EuroHaptics 2008, Madrid, Spain, June 11-13, 2008.
- [D3] **V. Lévesque**, A. Gosline and V. Hayward (2008). Refreshable Tactile Graphics with the STReSS<sup>2</sup> Laterotactile Display. Haptics Symposium 2008, Reno, Nevada, March 13-14, 2008. *Best Demonstration Award.*
- [D4] **V. Lévesque**, J. Pasquero, V. Hayward, and M. Legault (2004). Display of Virtual Braille Dots by Lateral Skin Deformation. 14th Annual Canadian Conference on Intelligent Systems (IRIS), Ottawa, Canada, June 2004.
- [D5] J. Pasquero, **V. Lévesque** and V. Hayward (2002). Miniature Tactile Display. 12th Annual Canadian Conference on Intelligent Systems (IRIS), Calgary, Canada, May 2002. *Best Demonstration Award.*

## **PATENTS**

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### **Issued Patents**

- [P1] D. Grant, **V. Lévesque**, A. Weddle, D. Birnbaum, J. M. Cruz-Hernandez, and J. Saboune (2018). Systems, Methods for Haptic Fiddling. US Patent 10,037,081, filed August 27, 2013, and issued July 31, 2018.
- [P2] D. Grant, **V. Lévesque**, E. Redelsheimer, D. Parker (2018). Wearable Device with Flexibly Mounted Haptic Output Device. US Patent 10,032,345, filed April 2, 2014, and issued July 24, 2018.

- [P3] **V. Lévesque**, J. M. Cruz-Hernandez, D. Grant, J. Saboune, L. Wu, K. E. Stahlberg, and A. Hamam (2018). Systems, Methods for Force-Based Object Manipulation, Haptic Sensations. US Patent 10,031,583, filed March 19, 2015, and issued July 24, 2018.
- [P4] **V. Lévesque**, J. Saboune, J. M. Cruz-Hernandez, A. Hamam, V. Khoshkava, and L. Wu (2018). Systems And Methods For Providing Haptic Effects In Response To Deformation Of A Cover For An Electronic Device. US Patent 10,013,060, filed September 18, 2015, and issued July 3, 2018.
- [P5] **V. Lévesque** (2018). Haptic CAPTCHA. US Patent 9,990,040, filed September 25, 2015, and issued June 5, 2018.
- [P6] V. Khoshkava, **V. Lévesque**, J. M. Cruz-Hernandez, M. Alghooneh, and W. Rihn (2018). Systems and Methods for Position-Based Haptic Effects. US Patent 9,990,078, filed December 11, 2015, and issued June 5, 2018.
- [P7] K. Shah, **V. Lévesque** (2018). Systems and Methods for Monitoring Insulation Integrity for Electrostatic Friction. US Patent 9,983,675, filed June 10, 2016, and issued May 29, 2018.
- [P8] **V. Lévesque**, A. Modarres, A. Weddle, and D. Birnbaum (2018). Systems, methods for a haptically-enabled projected user interface. US Patent 9,965,034, filed December 30, 2013, and issued May 8, 2018.
- [P9] J. M. Cruz-Hernandez, D. Grant, **V. Lévesque**, and A. Modarres (2018). System, Method for a Haptically-Enabled Deformable Surface. US Patent 9,939,900, filed March 21, 2014, and issued April 10, 2018.
- [P10] **V. Lévesque**, J. M. Cruz-Hernandez, M. Motamedi, K. Shah and A. Modarres (2018). Method and apparatus for controlling generation of electrostatic friction effects for a plurality of electrodes. US Patent 9,928,700, filed January 25, 2017, and issued March 27, 2018.
- [P11] **V. Lévesque**, D. M. Birnbaum, B. Belley, J. Saboune, V. Khoshkava, S. Forest, and J. M. Cruz-Hernandez (2018). Externally-Activated Haptic Devices and Systems. US Patent 9,928,696, filed December 30, 2015, and issued March 27, 2018.
- [P12] **V. Lévesque**, D. Grant, A. Modarres, and J. Saboune (2018). Systems, Methods for Haptically-Enabled Curved Devices. US Patent 9,921,650, filed March 19, 2015, and issued March 20, 2018.
- [P13] **V. Lévesque**, A. Hamam, D. A. Grant (2016). Systems and Methods for Deformation and Haptic Effects. US Patent 9,921,609, filed August 2, 2016, and issued March 20, 2018.
- [P14] **V. Lévesque** and Vahid Khoshkava (2018). Selective Control Of An Electric Field To Deliver A Touchless Haptic Effect. US Patent 9,898,904, filed August 17, 2016, and issued February 20, 2018
- [P15] V. Khoshkava, **V. Lévesque**, J. Saboune, A. Hamam, J. M. Cruz-Hernandez, L. Wu (2018). Systems and Methods for Haptic Surface Elements. US Patent 9,898,903, filed March 7, 2016, and issued February 20, 2018.
- [P16] **V. Lévesque** (2018). Systems and Methods for Closed-Loop Control for Haptic Feedback. US Patent 9,886,829, filed June 20, 2016, and issued February 6, 2018.
- [P17] **V. Lévesque** (2018). Haptic Effects Conflict Avoidance. US Patent 9,881,467, filed February 22, 2016, and issued January 30, 2018.

- [P18] **V. Lévesque** (2018). Automated Haptic Setting Generation. US Patent 9,880,627, filed December 15, 2015, and issued January 30, 2018.
- [P19] R. Lacroix and **V. Lévesque** (2018). Friction modulation for three dimensional relief in a haptic device. US Patent 9,880,623, filed March 11, 2013, and issued January 30, 2018.
- [P20] V. Khoshkava, **V. Lévesque** and J. M. Cruz-Hernandez (2018). Systems and Methods for Multifunction Haptic Output Devices. US Patent 9,875,625, filed December 18, 2015, and issued January 23, 2018.
- [P21] D. Grant, P. Pimentel, E. Gervais, **V. Lévesque**, A. Kapelus, M. Chang, D. Parker, D. Birnbaum, L. Jiang, and S. Rank (2018). Systems, Methods for Enhanced Television Interaction. US Patent 9,866,924, filed March 14, 2013, and issued January 9, 2017.
- [P22] **V. Lévesque**, J. M. Cruz-Hernandez, A. Hamam (2017). Systems and Methods for Haptically-Enabled Holders. US Patent 9,851,805, filed December 24, 2014, and issued December 26, 2017.
- [P23] D. Grant and **V. Lévesque** (2017). Haptic sensations as a function of eye gaze. US Patent 9,833,697, filed March 11, 2013, and issued December 5, 2017.
- [P24] **V. Lévesque** and J. M. Cruz-Hernandez (2017). System, Method For Feedforward, Feedback With Haptic Effects. US Patent 9,836,150, filed March 14, 2013, and issued December 5, 2017.
- [P25] **V. Lévesque**, A. Hamam, J. M. Cruz-Hernandez, and V. Khoskava (2017). Systems and Methods for Providing Enhanced Haptic Feedback. US Patent 9,763,628, filed December 31, 2014, and issued September 19, 2017.
- [P26] **V. Lévesque**, A. A. Dauhajre (2017). Haptic Functionality For Network Connected Devices. US Patent 9,756,604, filed July 21, 2016, and issued September 5, 2017.
- [P27] **V. Lévesque**, D. Grant, J.-F. Blanchard-Dionne, A. Weddle, and J. M. Cruz-Hernandez (2017). Haptic notification manager. US Patent 9,733,880, filed May 30, 2014, and issued August 15, 2017.
- [P28] **V. Lévesque**, A. Modarres, N. Olien, D. Grant, E. Ramsay, D. Birnbaum, and A. Weddle (2017). Systems, Methods For Perceptual Normalization of Haptic Effects. US Patent 9,729,730, filed July 2, 2013, and issued August 8, 2017.
- [P29] **V. Lévesque** and J. M. Cruz-Hernandez (2017). Systems, Methods For Determining Haptic Effects For Multi-Touch Input. US Patent 9,710,063, filed July 21, 2014, and issued July 18, 2017.
- [P30] A. Modarres, J. M. Cruz-Hernandez, C. Ullrich, D. Grant, N. Olien, and **V. Lévesque** (2017). Systems, Methods for Multi-Output Electrostatic Haptic Effects. US Patent 9,696,806, filed July 2, 2014, and issued July 4, 2017.
- [P31] **V. Lévesque**, D. Grant, J. Saboune, A. Hamam, and W. Rihn (2017). Systems, Methods for Shape Input, Output for a Haptically-Enabled Deformable Surface. US Patent 9,690,381, filed August 21, 2014, and issued June 27, 2017.
- [P32] E. Gervais, S. Asfour, J. Saboune, A. Alhabi, and **V. Lévesque** (2017). Crowd-Based Haptics. US Patent 9,691,238, filed October 14, 2015, and issued June 27, 2017.

- [P33] **V. Lévesque** and D. Grant (2017). Systems, Methods for Viewport-Based Augmented Reality Haptic Effects. US Patent 9,690,370, filed May 5, 2014, and issued June 27, 2017.
- [P34] **V. Lévesque**, A. Modarres, A. Weddle, D. Birnbaum, J. M. Cruz-Hernandez, and H. D. Costa (2017). Method, apparatus of body-mediated digital content transfer, haptic feedback. US Patent 9,671,826, filed December 13, 2013, and issued June 6, 2017.
- [P35] J. M. Cruz-Hernandez, **V. Lévesque**, J. Saboune, D. Grant, R. Lacroix, and A. Hamam (2017). Haptic Feedback In A Haptically Noisy Environment. US Patent 9,659,468, filed September 16, 2015, and issued May 23, 2017.
- [P36] **V. Lévesque**, W. Zhu, E. Gervais, F. An, E. Lajeunesse, J. Maalouf (2017). Systems and Methods for Haptically-Enabled Interactions with Objects. US Patent 9,658,693, filed December 19, 2014, and issued May 23, 2017.
- [P37] **V. Lévesque**, A. Modarres, J. M. Cruz-Hernandez, and J. Saboune (2017). Method, System For Providing Haptic Effects Based on Information Complementary to Multimedia Content. US Patent 9,652,945, filed December 31, 2013, and issued May 16, 2017.
- [P38] **V. Lévesque** (2017). Systems and Methods for Haptic Feedback for Modular Devices. US Patent 9,645,647, filed May 13, 2015, and issued May 9, 2017.
- [P39] W. Rihn, D. Birnbaum, Y. Wang, **V. Lévesque**, and D. Grant (2017). Mobile device with motion controlling haptics. US Patent 9,645,643, filed June 17, 2014, and issued May 9, 2017.
- [P40] **V. Lévesque**, A. Modarres, J. M. Cruz-Hernandez, A. Weddle, D. Birnbaum, and D. Grant (2013). Systems, methods for generating friction and vibrotactile effects. US Patent 9,639,158, filed November 26, 2013, and issued May 2, 2017.
- [P41] J. M. Cruz-Hernandez, J. Saboune, **V. Lévesque**, and A. Modarres (2017). Systems and Methods for Generating Haptic Effects Associated With Audio Signals. US Patent 9,619,980, filed November 12, 2013, issued April 11, 2017.
- [P42] **V. Lévesque**, D. Grant and Y. Wang (2017). Haptically-Enabled Deformable Device with Rigid Component. US Patent 9,606,625, filed October 13, 2014, issued March 28, 2017.
- [P43] **V. Lévesque** and J. M. Cruz-Hernandez (2017). Systems, methods to generate haptic feedback for skin-mediated interactions. US Patent 9,600,083, filed July 15, 2014, issued March 21, 2017.
- [P44] **V. Lévesque**, W. Zhu, E. Gervais, F. An, E. Lajeunesse, J. Maalouf (2017). Systems and Methods for Object Manipulation with Haptic Feedback. US Patent 9,600,076, filed December 19, 2014, issued March 21, 2017.
- [P45] **V. Lévesque**, D. Grant, J. M. Cruz-Hernandez, A. Modarres, W. Rihn (2017). Systems and Methods for Deformation-Based Haptic Effects. US Patent 9,535,550, filed November 25, 2014, issued January 3, 2017.
- [P46] **V. Lévesque**, D. Birnbaum, A. Weddle, R. Lacroix, J. M. Cruz-Hernandez, D. Grant, N. Olien, E. Ramsay, A. Modarres (2016). Systems and Methods for Providing Haptic Notifications. US Patent 9,529,435, filed December 30, 2014, issued December 27, 2016.
- [P47] A. Modarres, **V. Lévesque**, D. Grant, and J. M. Cruz-Hernandez (2016). Haptic feedback for interactions with foldable-bendable displays. US Patent 9,524,030, filed March 21, 2014, issued December 20, 2016.



- [P48] **V. Lévesque** (2016). Contactor-based haptic feedback generation. US Patent 9,436,282, filed March 14, 2013, issued September 6, 2016.
- [P49] A. Modarres, J. M. Cruz-Hernandez, D. Grant, and **V. Lévesque** (2016). Simulation of tangible user interface interactions, gestures using array of haptic cells. US Patent 9,405,369, filed April 25, 2014, and issued August 2, 2016.
- [P50] **V. Lévesque**, J. Saboune and D. Birnbaum (2016). Method, apparatus of converting control tracks for providing haptic feedback. US Patent 9,401,079, filed August 29, 2014, and issued July 26, 2016.
- [P51] **V. Lévesque**, J. M. Cruz-Hernandez, A. Weddle, and D. Birnbaum (2016). System and Method for Simulated Physical Interactions With Haptic Effects. US Patent 9,330,544, filed March 14, 2013, and issued May 3, 2016.
- [P52] **V. Lévesque** (2015). Automatic haptic effect adjustment system. US Patent 9,202,352, filed March 11, 2013, and issued December 1, 2015.
- [P53] **V. Lévesque** and A. Weddle (2015). Systems, Methods For Haptics In Vibrating Environments, Devices. US Patent 9,202,351, filed March 11, 2013, and issued December 1, 2015.
- [P54] **V. Lévesque** and J. M. Cruz-Hernandez (2015). Method, apparatus for simulating surface features on a user interface with haptic effects. US Patent 9,196,134, filed October 31, 2012, and issued November 24, 2015.
- [P55] D. Grant and **V. Lévesque** (2015). User interface device provided with surface haptic sensations. US Patent 9,041,647, filed March 15, 2013, and issued May 26, 2015.
- [P56] V. Hayward, J. Pasquero and **V. Lévesque** (2006). Apparatus to reproduce tactile sensations. US Patent 7,077,015, filed May 29, 2003, and issued July 18, 2006.

### **Pending Patents**

- [A1] **V. Lévesque** and M. Motamedi (2016). Handheld Interface Device Having a Plurality of Electrostatic Friction (ESF) Electrodes. US Patent Application 15/355,353, filed November 18, 2016, pending.
- [A2] **V. Lévesque**, M. Alghooneh, J. Saboune, V. Khoshkava, M. Motamedi, D. Grant, J. M. Cruz-Hernandez, and L. Wu (2016). Control of Contact Conditions for Static ESF. US Patent Application 15/354,148, filed November 17, 2016, pending.
- [A3] **V. Lévesque**, J. Saboune and J. M. Cruz-Hernandez (2016). Systems and Methods for Providing Electrostatic Haptic Effects via a Wearable or Handheld Device. US Patent Application 15/290,069, filed October 11, 2016, pending.
- [A4] **V. Lévesque**, A. Modarres and W. S. Rihn (2016). Compensated Haptic Rendering for Flexible Electronic Devices. US Patent Application 15/261,447, filed September 9, 2016, pending.
- [A5] V. Khoshkava, J. M. Cruz-Hernandez, and **V. Lévesque** (2016). Local Haptic Actuation System. US Patent Application 15/256,197, filed September 2, 2016, pending.
- [A6] **V. Lévesque**, D. Grant, R. Mousakhanian, A. Rabemiarisoa, G. Isajanyan, and A. Zhu (2016). Systems and Methods for Providing Haptic Feedback via a Case. US Patent Application 15/183,182, filed June 15, 2016, pending.

- [A7] K. Shah, **V. Lévesque** (2016). Haptic Feedback for Opportunistic Displays. US Patent Application 15/176,692, filed June 8, 2016, pending.
- [A8] **V. Lévesque** and V. Khoshkava (2015). Wearable Article Having An Actuator That Performs Non-Haptic And Haptic Operations. US Patent Application 14/974,963, filed December 18, 2015, pending.
- [A9] L. Wu, H. Da Costa, C. Yang, **V. Lévesque**, H. Yu, D. M. Birnbaum, and C. Ullrich (2015). Delivery Of Haptics To Select Recipients Of A Message. US Patent Application 14/968,363, filed December 14, 2015, pending.
- [A10] **V. Lévesque** (2015) Haptically Enabled Flexible Devices. US Patent Application 14/947,661, filed November 20, 2015, pending.
- [A11] **V. Lévesque**, A. Zhu, E. Gervais, F. An, J. Maalouf, and E. Lajeunesse (2015). Systems And Methods For Location-Based Notifications For Shopping Assistance. US Patent Application 14/851,140, filed September 11, 2015, pending.
- [A12] **V. Lévesque**, J. M. Cruz-Hernandez, A. Hamam, and V. Khoshkava (2015). Haptic Effects Based On Predicted Contact. US Patent Application 14/717,393, filed May 20, 2015, pending.
- [A13] A. Hamam, J. M. Cruz-Hernandez, L. Wu, J. Saboune, **V. Lévesque**, R. Lacroix, and D. Grant (2015). Systems And Methods For Tactile Guidance. US Patent Application 14/697,680, filed April 28, 2015, pending.
- [A14] J. M. Cruz-Hernandez, J. Saboune, A. Hamam, and **V. Lévesque** (2014). Deformable Haptic Wearables with Variable Physical Properties. US Patent Application 14/585,429, filed December 30, 2014, pending.
- [A15] **V. Lévesque**, N. Olien, C. Ullrich, D. Birnbaum, and A. Weddle (2014). Friction augmented controls, method to convert buttons of touch control panels to friction augmented controls. US Patent Application 14/585,898, filed December 30, 2014, pending.
- [A16] **V. Lévesque**, J. Saboune and D. Birnbaum (2014). Systems, methods for recording, playing back point-of-view videos with haptic content. US Patent Application 14/585,752, filed December 30, 2014, pending.
- [A17] **V. Lévesque**, J. M. Cruz-Hernandez, A. Dauhajre, P. Raynes, S. S. Bhatia (2014). Systems and Methods for Generating Haptic Effects Based on Eye Tracking. US Patent Application 14/584,098, filed December 29, 2014, pending.
- [A18] **V. Lévesque**, A. Modarres, D. Grant, J. F. Dionne, and D. Birnbaum (2014). Systems, methods for providing haptic feedback for remote interactions. US Patent Application 14/275,216, filed May 12, 2014, pending.
- [A19] **V. Lévesque** (2013). Usable hidden controls with haptic feedback. US Patent Application 13/945,498, filed July 18, 2013, pending.
- [A20] **V. Lévesque**, D. Birnbaum, J. M. Cruz-Hernandez, and A. Weddle (2013). Systems, Methods For Providing Mode or State Awareness With Programmable Surface Texture. US Patent Application 13/830,125, filed March 14, 2013, pending.
- [A21] **V. Lévesque** and J. M. Cruz-Hernandez (2013). Method, apparatus for providing haptic cues for guidance, alignment with electrostatic friction. US Patent Application 13/782,771, filed March 1, 2013, pending.

[A22] D. Birnbaum, **V. Lévesque** and D. Grant (2013). Mobile device with instinctive alerts. US Patent Application 13/772,682, filed February 21, 2013, pending.

## **PROFESSIONAL AFFILIATIONS**

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2017-present Junior engineer, **Ordre des ingénieurs du Québec (OIQ)**  
2011-present Member of the **Association for Computer Machinery (ACM)**  
2010-present Member of the **Tactile Research Group (TRG)**  
2007-present Member of the **IEEE Technical Committee on Haptics (TCH)**  
2000-present Member of the **Institute of Electrical and Electronics Engineers (IEEE)**

## **PROFESSIONAL SERVICE**

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### **Editorship**

2016-present **Associate Editor**, IEEE Transactions on Haptics  
2013-2014 **Podcast Co-Editor**, IEEE Transactions on Haptics

### **Conference Organization**

2020 **Program Chair, IEEE Haptics Symposium 2020**  
2019 **Chair of Transactions on Haptics Session**, IEEE World Haptics 2019  
2018 **Chair of Transactions on Haptics Posters**, IEEE Haptics Symposium 2018  
2018 **Chair of Works-in-Progress (WIP)**, IEEE Haptics Symposium 2018  
2014-2018 **Program Committee**, IEEE Haptics Symposium 2018, 2016, 2014  
2012-2018 **Program Committee**, EuroHaptics 2018, 2016, 2014, 2012  
2016 **Chair of Workshops and Tutorials**, IEEE Haptics Symposium 2016  
2015 **Program Committee**, IEEE World Haptics Conference 2015  
2014 **Program Committee**, IEEE HAVE 2014  
2011-2012 **WIP Program Committee**, ACM CHI 2012, 2011  
2012 **Co-organizer, Invited Session on Haptic HCI**, IEEE Haptics Symposium 2012  
2011 **WIP Program Committee**, GRAND 2011

### **Dissertation Reviewing**

2014 **External Examiner** for Ph.D. thesis of Jussi Rantala, University of Tampere, Finland

### **Journal Reviewing**

2018 Displays (1 manuscript)  
2017 International Journal of Human-Computer Interaction (1 manuscript)  
2017 Mechatronics (1 manuscript)  
2017 IEEE Robotics & Automation Letters (1 manuscript)

2010-2017	IEEE Transactions on Haptics (27 manuscripts)
2016	Tribology International (1 manuscript)
2016	ROBOMECH Journal (1 manuscript)
2016	Sensors (1 manuscript)
2016	International Journal of Human-Computer Studies (1 manuscript)
2014-2015	Virtual Reality (2 manuscripts)
2015	ACM Transactions on Accessible Computing (1 manuscript)
2015	ACM Transactions on Interactive Intelligent Systems (1 manuscript)
2013-2014	Interacting with Computers (5 manuscripts)
2009-2014	IEEE Transactions on Neural Systems & Rehabilitation Engineering (3 manuscripts)
2013	Advanced Robotics (1 manuscript)
2013	PLOS ONE (1 manuscript)
2013	International Journal of Robotics Research (1 manuscript)
2013	IEEE Computer Graphics and Applications (1 manuscript)
2012	ACM Transactions on Applied Perception (2 manuscripts)
2012	Universal Access to the Information Society (1 manuscript)
2012	ACM Transactions on Computer-Human Interactions (1 manuscript)
2012	International Journal of Industrial Ergonomics (1 manuscript)
2009	Teaching Statistics (1 manuscript)
2009	IEEE/ASME Transactions on Mechatronics (1 manuscript)

### **Conference Reviewing**

2018	ACM NordiCHI 2018 (4)
2018	IEEE Canadian Conf. on Electrical and Computer Engineering (CCECE) 2018 (3)
2018	IEEE Virtual Reality (VR) 2018 (2), 2017 (1)
2012-2018	IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS) 2018 (2), 2017 (1), 2013 (2), 2012 (1)
2010-2018	ACM International Conference on Multimodal Interaction (ICMI) 2018 (4), 2017 (4), 2016 (7), 2015 (4), 2014 (3), 2010 (1)
2010-2018	EuroHaptics 2018 (1), 2010 (7)
2010-2018	IEEE Haptics Symposium 2018 (1), 2012 (7), 2010 (6)
2007-2018	ACM Conference on Human Factors in Computing Systems (CHI) 2018 (4), 2017 (3), 2016 (2), 2015 (6), 2014 (3), 2013 (2), 2012 (2), 2011 (3), 2007 (1)
2009-2017	IEEE World Haptics Conference 2017 (4), 2015 (2), 2013 (5), 2011 (6), 2009 (2)
2008-2017	ACM User Interface Software and Technology Symposium (UIST) 2017 (1), 2012 (1), 2010 (1), 2008 (1)
2012-2015	ACM CHI Extended Abstracts (CHI EA) 2015 (1), 2013 (3), 2012 (1)

- 2012-2015 ACM Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH) 2015 (1), 2014 (1), 2013 (1), 2012 (1)
- 2015 ACM Interactive Tabletops and Surfaces (ITS) 2015 (1)
- 2014 IEEE International Conference on Robotics and Automation (ICRA) 2014 (1)
- 2012-2013 ACM International Conference on Human-Computer Interaction with Mobile Devices and Service (MobileHCI) 2013 (3), 2012 (2)
- 2013 International Conference on Consumer Electronics (ICCE) 2013 (2)
- 2012 IEEE Int. Symp. on Haptic Audio-Visual Environments and Games (HAVE) 2012 (1)
- 2009 ASME International Design Engineering Technical Conferences & Computers & Information in Engineering Conference (IDETC/CIE) 2009 (2)
- 2009 Joint Virtual Reality Conference (JVRC) 2009 (1)
- 2009 ASME International Mechanical Eng. Congress and Exposition (IMECE) 2009 (1)

## ENTREPRENEURSHIP

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- 2016-2017 **Feel Forward Haptics Inc.**, Montréal, Canada  
*Founder and president*  
Consulting services and development of intellectual property related to haptic technologies and their applications in consumer products.
- 2008-2017 **Tactile Labs Inc.**, Montréal, Canada  
*Co-founder, vice-president (2009-2011), president (2008-2009)*  
Non-profit organisation with the mission of refining and distributing precompetitive haptic devices such as vibrotactile actuators and tactile displays for use in research.

## OPEN SOURCE & WEBSITES

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- 2016-present **OpenLatero.org**  
*Creator and Developer*  
Open source community dedicated to Tactile Labs' Latero tactile display. Seeded with C/C++ software developed during Ph.D., including API and tactile graphics library.
- 2006-2009 **Laterotactile.com**  
*Co-creator and Maintainer (with J. Pasquero)*  
Website about research on tactile displays operating by lateral skin deformation.
- 2005 **Sidus**, <http://sidus.sourceforge.net>  
*Creator and Developer*  
C++ library and linux driver for the Nova Engineering FPGA development board.

## MEDIA COVERAGE (SELECTED)

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- Feb. 2016 **The Verge**, "This flexible phone prototype lets you flick through digital books"
- Feb. 2016 **Fortune**, "See The Smartphone That Can Bend, Not Break"
- Feb. 2016 **Engadget**, "Flexible smartphones may be coming sooner than you think"

Feb. 2016	<b>Wired</b> , “This is the world's first actually-useful bendable phone”
May 2011	<b>NewScientist: One Per Cent</b> , “Programmable friction makes touchscreens feel sticky”
May 2011	<b>MIT Technology Review</b> , “A Touch Screen that Plays Sticky”
May 2011	<b>Gizmodo</b> , “Future Touchscreens Might Have Adjustable 'Stickiness' Factor”
May 2011	<b>Slashdot</b> , “A Sticky Touch Screen Lets You Feel the Buttons”
April 2009	<b>McGill Reporter</b> , “The touch of technology”
Sept. 2008	<b>New Scientist</b> , “New computer display let’s the blind feel the detail”
Jan. 2007	<b>IT World Canada</b> , “Virtual Braille opens employment doors for visually impaired”
June 2003	<b>Global TV Montréal</b> , Global News
March 2003	<b>McGill Reporter</b> , “Braille for computers”

## TALKS

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### Invited Talks

1. “Designing the Haptic User Experience.” Invited Talk, Technoculture, Art and Games (TAG), Concordia, June 2014. *Lecture in class on designing for the senses.*
2. “Programmable Friction and the Haptic User Experience.” Invited Talk, Tactile Research Group Meeting, Toronto, Canada, November 2013.
3. “Enhancing Touch Interactions with Programmable Friction.” Invited Talk, Workshop on Vibrotactile Haptics for Touch Screens, IEEE World Haptics Conference 2011, Istanbul, Turkey, June 2011.
4. “Do-It-Yourself Haptics: A Practical Introduction to Haptics for Consumer Electronics.” IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, January 2011.
5. “Laterotactile Displays and Rendering: from Illusion to Application.” IEEE VR 2008 Tutorial, Integration of Haptics in Virtual Environments: from Perception to Rendering, Reno, Nevada, March 2008. (with J. Pasquero)
6. “Refreshable Braille and Tactile Graphics by Lateral Skin Deformation.” First Canada-Europe eInclusion Symposium for Deaf and Blind Communities, Montréal, Canada, March 2007.
7. “Laterotactile Devices and Rendering. Tactile Display Design Workshop.” EuroHaptics 2006, Paris, France, July 2006.
8. “Experimental Evidence of Lateral Skin Strain During Tactile Exploration.” Online presentation, International Society for Haptics, May 2004.

### Conference Presentations

1. “Exploring the Design Space of Programmable Friction for Scrolling Interactions.” IEEE Haptics Symposium 2012, Vancouver, Canada, March 2012.
2. “Adaptive Level of Detail in Dynamic, Refreshable Tactile Graphics.” IEEE Haptics Symposium 2012, Vancouver, Canada, March 2012.

3. “Enhancing Physicality in Touch Interaction with Programmable Friction.” ACM Conference on Human Factors in Computing Systems (CHI '11), Vancouver, Canada, May 2011.
4. “Laterotactile Rendering of Vector Graphics with the Stroke Pattern.”, EuroHaptics 2010, Amsterdam, Netherlands, July 2010.
5. “Tactile Graphics Rendering Using Three Laterotactile Drawing Primitives.” IEEE Haptics Symposium 2008, Reno, USA, March 2008.
6. “Refreshable tactile graphics using a lateral skin deformation device.” 9th International Conference on Low Vision, Montréal, Canada, July 2008.
7. “Braille Display by Lateral Skin Deformation with the STReSS<sup>2</sup> Tactile Transducer.” IEEE World Haptics Conference 2007, Tsukuba, Japan, March 2007.
8. “Experimental Evidence of Lateral Skin Strain During Tactile Exploration.” EuroHaptics 2003, Dublin, Ireland, July 2003.