

## Curriculum Vitæ (Fall 2017)

**Vincent Hayward**, Professeur, 1<sup>re</sup> classe, Section 61 vincent.hayward@upmc.fr — +33 (0)1 44 27 51 87  
Sorbonne Université (formerly Université Pierre et Marie Curie, Paris 6)

### Education

1978–81 Thèse de Docteur Ingénieur, Université de Paris XI at Orsay, France  
1978 Diplôme d'études approfondies, Université de Nantes  
1975–78 Diplôme d'Ingénieur, Ecole Centrale de Nantes (then ENSM), Nantes, France

### Employment

2017– Visiting Professor of Tactile Perception and Technologies, School of Advanced Study, University of London (part time)  
2017– Chief Scientific Officer, Actronika SAS, Paris (part time)  
2011– Professeur (on leave 2017–) Inst. des Systèmes Intelligents et de Robotique, Université Pierre et Marie Curie  
2008–11 Professeur (associé), Institut des Systèmes Intelligents et de Robotique, Université Pierre et Marie Curie  
2006–11 Professor (on leave 2008–11), Dept. of Electrical Engineering, McGill University, Montréal, QC Canada  
2006–07 Professeur Invité, Université Pierre et Marie Curie  
2001–04 Director, Center for Intelligent Machines, McGill University, Montréal, Qc Canada  
1994–06 Associate Professor, Department of Electrical and Computer Engineering, McGill University, Montréal, Qc Canada  
1989–94 Assistant Professor, Department of Electrical Engineering, McGill University, Montréal, Qc Canada  
1985–89 Adjunct Professor, Department of Electrical Engineering, McGill University Montréal, Qc Canada  
1983–85 Attaché then Chargé de Recherche at the Centre National de la Recherche Scientifique (CNRS)  
1984 Consultant, Hewlett Packard Laboratories, Manufacturing Research Center, Palo Alto, California, USA  
1981–83 Visiting Assistant Professor, Purdue University, School of Electrical Engineering, West Lafayette, Indiana, USA

### Ten representative articles

- Miller, L. E., Montroni, L., Koun, E., Salemme, R., Hayward, V., Farnè, A. 2018. Sensing With Tools Extends Somatosensory Processing Beyond The Body. *Nature*, 561(7722):239–242.
- Dzidek, B., Bochereau, S., Johnson, S. A., Hayward, V., and Adams, M. J. 2017. Why Pens Have Rubbery Grips. *Proceedings of the National Academy of Sciences*, 114(41):10864–10869.
- Deroy, O., Fasiello, I., Hayward, V., Auvray, M. 2016. Differentiated Audio-Tactile Correspondences in Sighted and Blind Individuals. *Journal of Experimental Psychology: Human Perception and Performance*, 42(8):1204–1214.
- Shao, Y., Hayward, V., Visell, Y. 2016. Spatial Patterns of Cutaneous Vibration During Whole-Hand Haptic Interactions, *Proceedings of the National Academy of Sciences*, 113(15):4188–4193
- Dupin, L., Hayward, V. Wexler, M. 2015. Direct Coupling of Haptic Signals Between Hands. *Proceedings of the National Academy of Sciences*, 112(2):619–624.
- Jörntell, H., Bengtsson, F., Geborek, P., Spanne, A., Terekhov, A. V., Hayward, V. 2014. Segregation of Tactile Input Features in Neurons of the Cuneate Nucleus. *Neuron*. 83:1444–1452.
- Bochereau, S., Terekhov, A. V., Hayward, V. 2014. Amplitude And Duration Interdependence in the Perceived Intensity of Complex Tactile Signals. *Proceedings of Eurohaptics*, pp. 93-100. (Best Oral Paper honorable mention)
- Wiertlewski, M., Lozada, J., Hayward, V. 2011. The Spatial Spectrum Of Tangential Skin Displacement Can Encode Tactual Texture. *IEEE Transactions on Robotics*, 27(3):461–472
- Konkle, T., Wang, Q., Hayward, V., and Moore, C. I. 2009. Motion After-Effects Transfer Between Touch and Vision, *Current Biology*, 19(9):745–750
- Hayward, V. and K. E. MacLean, V. 2007. Do it yourself haptics, Part-I. *IEEE Robotics and Autom. Magazine*, 14(4):88–104

### Research Contributions

99 articles in journals (*Nature* (2), *PNAS* (3), *Neuron* (1), *Current Biology* (2), *Royal Society Journals*, *Scientific Reports*, *Plos ONE*) 23 chapters in books, 153 papers in conference proceedings, 25 patents, 60+ invited lectures in the past 10 years, H-index: 57 (Google Scholar), 38 (Scopus). More than 30 mentions in the press including *Wired Magazine* (2015), “Big Data: The Next Google” *Nature* Vol. 455 (2008), *The New Scientist* (thrice), or *The Economist* (2007).

### Active Research Grants

2018–21 *Mixed Haptic Feedback for Mid-Air Interactions in Virtual and Augmented Realities* (H-Reality). M. J. Adams (Coordinator), S. A. Seah, V. Hayward, J. Hartcher-O'Brien, C. Pacchierotti (PIs), H2020 Research and Innovation action, FET Open project, 200,000 €/year of 1,000,000 €/year.

2018–19 *Distal projection of tactile sensations from oculomotor signals*, Research Contract, Oculus VR, US\$ 117,000.

2017–18 *Hand-to-Hand Remote Deafblind Tactile Communication*, Google Faculty Research Award, V. Hayward, US\$ 91,000.

2017–18 *Visiting Professorship*, The Leverhulme Trust, £ 84,400 + £ 84,400.

2016–20 *Developmental trajectories of sensorimotor control of mechanical tools*, L'Agence nationale de la recherche, (Developmental\_Tool\_Mastery), A. Farnè (Coordinator), A. Roy, V. Hayward, F. de Vignemont (PIs). 35,100 €/year of 151,000 €/year.

## **Awards and Distinctions (partial)**

2018 Best Demonstration Award, EuroHaptics Conference, Pisa, Italy.  
2018 Keynote, Workshop on active touch for perception and interaction, ICRA 2018, Brisbane, Australia  
2018 Keynote Speaker, Cross-Cutting Challenges, IEEE Haptics Symposium, San Francisco, CA, USA  
2018 Best Paper Award for 2017, IEEE Transactions on Haptics  
2018 Keynote Speaker, UK & Ireland IEEE Robotics and Automation Conference, London, UK  
2017 Plenary Speaker, 43rd International Conference On Micro And Nano-engineering, Braga, Portugal  
2017 Keynote Speaker, IEEE/RSJ International Conference on Intelligent Robots and Systems, Vancouver, BC, Canada  
2017 Leverhulme Trust Visiting Professorship, University of London  
2016 Keynote Speaker, Handicap 2016, Paris, France  
2015 Best Paper Award (honorable mention), World Haptics 2015, Chicago, USA.  
2014 Invited Speaker, AsiaHaptics 2014, Tsukuba, Japan  
2014 Best Paper Award (poster presentation) Eurohaptics 2014, Versailles, France  
2014 Best Paper Award (honorable mention, oral presentation) Eurohaptics 2014, Versailles, France  
2013 Distinguished Lecture Series, Department of Computing Science, University of British Columbia, Canada  
2012 Plenary Speaker 2012 IEEE Int. Conf. on Multisensor Fusion and Information Integration, Hamburg, Germany  
2012 Lecturer, Series 'Robotique, les fondations d'une discipline', Collège de France, Paris  
2010 Keynote Speaker, Haptic Audio Interaction Design 2010, Copenhagen, Denmark  
2010 Plenary Speaker, 32nd Annual Int. Conf. of the IEEE Engineering in Med. and Bio. Society, Buenos Aires, Argentina  
2010 Keynote Speaker, Joint European Meeting, EuroVR-EVE, Orsay, France  
2010 Best Paper Award, Eurohaptics, Amsterdam, the Netherlands  
2009 Lectio Magistralis, University of Verona, Verona, Italy  
2008 Elected Fellow of the IEEE  
2007 Lecturer, The Cutting Edge: Royal Society Lectures in Science, McGill University  
2007 Best Paper Award (applications), World Haptics 2007, Salt Lake City, Utah, USA  
2006 Keynote Speaker, 8th International IFAC Symposium on Robot Control, SYROCO 2006, Bologna, Italy  
2006 Best Demonstration Award, Eurohaptics 2006, Paris  
2006 Best Paper Award, ACM CHI'06 Conference, Montréal, Canada  
2006 Best Paper Award, 14th Symposium on Haptic Interfaces For Virtual Environ. & Teleop. Syst., Arlington, USA  
2005 Keynote Lecture, Dutch-Belgium Haptics Society, Brussels, Belgium  
2004 Keynote Speaker, Eurohaptics, Munich, Germany  
2003 Outstanding Reviewer for Automatica, Journal of the International Federation of Automatic Control  
2002 The E. (Ben) & Mary Hochhausen Award for Res. in Adaptive Technology For Blind and Visually Impaired Persons  
2001 Plenary Speaker, Workshop On Advances In Interactive Multimodal Telepresencesystems, Munich, Germany  
2000 Distinguished Lecture Series, Department of Computing Science, University of Alberta, Canada  
1995 Best Demonstration Award, 1995 IRIS-PREARN Conference, Ottawa, Canada  
1991 NASA Space Act Tech Brief Award (as a result of work on robot programming for JPL)

## **Teaching at the Université Pierre et Marie Curie**

2009–16 *Interfaces et réalité virtuelle* (niveau M2+ROB5), enrollment: 16, 15, 10, 22 (cours = 30 heures)  
2009–16 *Haptics for rehabilitation* (Master International, 50%), enrollment: 14, 15, 18, 25 (cours = 18 + 4 heures)  
2009–16 *Asservissements numériques*, (niveau ROB4) enrollment: 25, (cours + TD + TP = 20 + 17 + 8 heures)

## **Supervision**

In progress at UPMC: 3 Ph.D.

Completed at UPMC: 10 Postdocs; 10 Ph.D.; 11 Masters; 7 Research Engineers

Rest of career: 6 Postdocs; 17 Ph.D.; 18 Masters

## **Numerous other activities among which**

2007–11 Associate Editor, *IEEE Transactions on Haptics*

2007–14 Associate Editor, *ACM Transactions on Applied Perception*

1990– Many grant evaluations has ad-hoc reviewer; panel member including NSERC, NSF, EU FP7 and others; Frequent ad-hoc reviewer for conferences and journals; Co-founder in four start-up companies and consultancy for several high-tech companies.

## **Event Organization** (brief selection)

2014 General Chair of Eurohaptics 2014, 24–27 June 2014, Versailles, France. The event attracted 270 international participants as well as eleven industry sponsors..

2013 Co-organized with Jonathan Platkiewicz the first "Workshop on Early Touch" at the Computational Neuroscience Meeting, July 17, 2013, Université Paris Descartes, Paris, France.

2006 Co-organized, together with Prof. J. M. Hollerbach (Univ. of Utah) the *IEEE-RAS/IFRR School of Robotics Science on Haptic Interaction*. The school hosted 35 Ph.D/Post-doctoral students from across the world.