Michaël Wiertlewski

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Employment

19– Assistant Professor – **TU Delft**, Cognitive Robotics Department. Delft, Netherlands

17– Scientific advisor – **Actronika S.A**, Paris, France.

14–19 Research Scientist **CNRS & Aix-Marseille Université**, Marseille, France
Biorobotics group of the Etienne-Jules Marey Institute for Movement Science

12–14 Postdoctoral Researcher – **Northwestern University**, Evanston Il, USA.
Neuroscience and Robotics Laboratory (NxR),

11–12 Postdoctoral Researcher – **Université Pierre et Marie Curie**, Paris, France
Institut des Systèmes Intelligents et de Robotique

Collaboration with psychology department of U. of Birmingham, UK

08–11 Research Assistant (PhD) – **CEA List**, Fontenay-Aux-Roses, France
Sensory and Ambient Interfaces Laboratory

07–08 R&D Engineer – **Centre de Robotique Intégrée d'Ile de France, Paris, France**

06–07 MSc Internship – **University of Canterbury**, Christchurch, New Zealand.
Department of Mechanical Engineering

Education

2011 **Université Pierre et Marie Curie**, Paris, France
Ph.D. degree in Mechanics, Acoustics, Electronics, and Robotics.
Reproduction of Tactual Textures: Transducers, Mechanics, and Signal Encoding
Research carried at the CEA LIST

2007 **Université Jean Monnet**, St Etienne, France
Master of Science, Computer Vision.

2007 **Ecole Nationale d'Ingénieurs** (ENISE), St Etienne, France
Diplôme d'Ingénieur, Mechanical Engineering.

Awards

2019 Best paper award for the 2018 IEEE Transactions On Haptics (with J. Monnoyer)
2018 Best Student Paper award at the 2018 Eurohaptics conference (with N. Huloux)
2017 IEEE Technical Committee on Haptics Early Career Award
2016 Best Student Paper award at the 2016 Eurohaptics conference (with J. Monnoyer)
2015 Meritorious Service Award as Reviewer for IEEE Transactions on Haptics journal
2013 "Prix de thèse du GdR Robotique" that awards the best French Ph.D. thesis in robotics
2012 EuroHaptics Society Ph.D. award
2011 Nominated for Best paper and Best Student paper awards at the WorldHaptics Conference 2011
2010 Best paper award at the 2010 Eurohaptics conference

Teaching

19– Applied Experimental Method. Guest lecturer. TU Delft
19– Human Controller. Guest lecturer. TU Delft
18 Haptic perception. Master Human Factors and Interaction. Aix-Marseille U., Marseille, France (8h)
17–19 Haptic technologies and tactile perception. Master Advanced Systems and Robotics. Sorbonne Université (ex- UPMC), Paris, France (16h)
15–17 Statistics at Licence 3 level, Aix-Marseille Université, France. (40h)
15–18 Solid Mechanics at Licence 3 level, Aix-Marseille Université, France. (20h)
11–12 Lecture on Haptics at MSc degree, ENISE, Saint Etienne, France. (2x8h)
11–12 Introduction to Matlab at MSc degree, ENSTA, Paris, France. (2x36h)
12 Introduction to Robotics at BS degree, UPMC, Paris, France. (48h)

Mentoring

18– co-Direction of Corentin Bernard's Ph.D. work with Solvi Ystad
17– co-Direction of Nicolas Huloux's Ph.D. work with Stéphane Viollet
17– Direction of Laurence Willemet's Ph.D. work with Bruno Cochelin
17– co-Direction of Xi Lin's Ph.D. work with Stéphane Viollet
17–18 Supervision of Corentin Bernard, Research Engineer
15– co-Direction of Jocelyn Monnoyer's Ph.D. work with Christophe Bourdin
10– Supervision of 10 Master degree students and many undergraduate students

Grants and funding

18–22 4TU Soft Robotics

17–20 ARC Discovery Project (PI: Ingvars Birznieks, involvement 20%) 375,000AU$

16–19 ANR Young Researcher (JCJC) project PHASE (PI) 288,750€
"Perception and Handling enabled by Artificial tactile SEnsing".

16–19 ANR Collaborative (PRC) project IOTA 138,000€
"Interactive Optical Tweezers with Tactile Feedback".
acting as WP leader, PI: Sinan Haliyo UPMC/ISIR

15–19 Funding from Peugeot-Citroen Automobiles within the Automotive Motion Lab 200,000€
Leader of collaborative research on haptics.

15 CNRS grant Mission Interdisciplinaire 15,000€
"Soft Tactile Sensor for Contact and Slippage sensing"

13–15 Involved in writing the grant proposal for NSF, Human Computer Interaction program, 1302422, "Force Feedback for Fingertips" with J. Edward Colgate and Michael Peshkin as principal investigators
08–11 PhD grant from CEA LIST
07 Excellence scholarship from the Université Jean Monnet
07 Scholarship from the University of Canterbury

Travel funding

11 Travel grant from Student Exchange Program, IEEE Technical Committee on Haptics
07 Rhône Alpes - Explor'a scholarship

Professional Service:

19 Evaluator for Agence Nationale de la Recherche (French funding agency)

18 Evaluator of Farzan Kalantari's thesis, Université de Lille

18–22 Board Member of the Eurohaptics Society

17 Evaluator for the CNRS Momentum Grant

17 Evaluator for the Foundation for Polish Science

14-18 Associate Editor for Worldhaptics and Eurohaptics conferences

14 Co-organizer of the "Surface Haptics" Workshop at Haptics Symposium 2014

13 Co-editor of IEEE's Transaction on Haptics Podcast

Reviewer: WorldHaptics'11,'13,'15,'17, Haptic Symposium'12,'14,'16,'18, Eurohaptics '12,'14,'16,'18, ICRA '12,15', CHI'15, Frontier of Neurorobotics, Journal of Biomechanics, IEEE Transactions on Haptics, IEEE Transactions on Robotics, Nature's Scientific Report, Royal Society Open Science

Publications and Patents

Book

B1. M. Wiertlewski, (2013) *Reproduction of Tactual Textures: Transducers, Mechanics, and Signal Encoding*, Springer Series on Touch and Haptic Systems.

Articles in Journals

J10. X. Lin, M. Wiertlewski (2019) *Sensing the Frictional State of a Robotic Skin via Subtractive Color Mixing*, IEEE Robotics and Automation Letters, 4(3). 2377-3766

J9. J. Monnoyer, E. Diaz, C. Bourdin, M. Wiertlewski (2018) *Perception of ultrasonic switches involves large discontinuity of the mechanical impedance*, Transactions on Haptics, 11(4):579–589

J8. M. Janko, M. Wiertlewski, Y. Visell. (2018) *Contact geometry and mechanics predict friction forces during tactile surface exploration*, Scientific Reports, 8.1: 4868.

J7. M. Wiertlewski, R. Fenton Friesen, J. E. Colgate. (2016) *Partial squeeze film levitation modulates fingertip friction*, Proceedings of the National Academy of Sciences, vol. 113 no. 33, 9210-9215

J6. S. Okamoto, M. Wiertlewski, V. Hayward. (2016) *Anticipatory vibrotactile cueing facilitates grip force adjustment during perturbative loading*. Transactions on Haptics, 9(2):233–242

J5. M. Wiertlewski and J. E. Colgate. (2015) *Power optimization of ultrasonic friction-modulation tactile interfaces*. Transactions on Haptics, 8(1):43–53.

J4. A. Klöcker, M. Wiertlewski, V. Theate, V.Hayward, J-L Thonnard. (2013) *Physical factors influencing pleasant touch during tactile exploration*, PLoS One, 8(11), e79085.

J3. M. Wiertlewski, V. Hayward. (2012) *Mechanical Behavior of the Fingertip in the Range of Frequencies and Displacements Relevant to Touch.* Journal of Biomechanics 45(11):1869–1874

J2. M. Wiertlewski, V. Hayward. (2012)*Transducer For Mechanical Impedance Testing over a Wide Frequency Range.* Review of Scientific Instruments. 83(2):025001

J1. M. Wiertlewski, J. Lozada, and V. Hayward. (2011) *The Spatial Spectrum of Tangential Skin Displacement Can Encode Tactual Texture.* IEEE Transactions on Robotics, 27(3):461–472

Conference Proceedings

C19. N. Huloux, J. Monnoyer, M. Boyron, M. Wiertlewski (2018) *Overcoming fingertip friction variability with surface haptics force-feedback*, In proc. of Eurohaptics 2018, pp. 326–337 **(Best Student Paper award)**

C18. C. Bernard, J. Monnoyer, M. Wiertlewski (2018) *Harmonious textures: The perceptual dimensions of synthetic sinusoidal gratings*, In proc. of Eurohaptics 2018, pp.685–695 **(Nominated for the Best Student Paper award)**

C17. J. Monnoyer, E. Diaz, C. Bourdin, M. Wiertlewski (2017) *Optimal Skin Impedance Promotes Perception of Ultrasonic Switches*, In proc. of IEEE Worldhaptics Conference 2017, pp. 130–135

C16. R. Fenton Friesen, M. Wiertlewski, M. A. Peshkin and J.E. Colgate. (2017) *The Contribution of Air to Ultrasonic Friction Reduction*, In proc. of IEEE Worldhaptics Conference 2017, pp. 517–522

C15. J. Monnoyer, E. Diaz, C. Bourdin, M. Wiertlewski (2016) *Ultrasonic Friction Modulation While Pressing Induces a Tactile Feedback*, In proc. of Eurohaptics 2016, pp. 171–179. **(Best Student Paper award)**

C14. M. Wiertlewski. (2016) Haptic feedback: from force-reflecting robots to tactile interfaces. In proc. Actuator 2016 **(keynote paper)**

C13. R. Fenton Friesen, M. Wiertlewski, and J.E. Colgate. (2016) *The Role of Damping in Ultrasonic Friction Reduction*, In proc. of Haptics Symposium, 2016, pp. 67–172.

C12. R. Fenton Friesen, M. Wiertlewski, M. A. Peshkin and J.E. Colgate. (2015) *Bioinspired Artificial Fingertips that Exhibit Friction Reduction when Subjected to Transverse Ultrasonic Vibrations*, In proc. of Worldhaptics 2015, pp. 208-213 **(Best Presentation Award and Nominated for Best Paper)**

C11. M. Wiertlewski, D. Leonardis, D.J. Meyer, M. Peshkin, J.E. Colgate. (2014) *A High-Fidelity Surface-Haptic Device for Texture Rendering on Bare Finger*, In proc. of Eurohaptics 2014, pp. 241-248.

C10. D.J. Meyer, M. Wiertlewski, M. Peshkin, J.E. Colgate. (2014) *Dynamics of Ultrasonic and Electrostatic Friction Modulation for Rendering Texture on Haptic Surfaces*, In proc. of Haptics Symposium, 2014, pp. 63-67.

C9. M. Wiertlewski, S. Endo, A. Wing, V. Hayward. (2013) *Slip-Induced Vibration Influences the Grip Reflex: A Pilot Study.* In proc. of IEEE, Worldhaptics 2013, pp. 627-632.

C8. S. Okamoto, M. Wiertlewski, V. Hayward. (2013) *Anticipatory Vibrotactile Cueing Facilitates Grip Force Adjustment.* In proc. of IEEE, Worldhaptics 2013, pp. 525-530.

C7. S. Strachan, M. Wiertlewski, H. Zophoniasson, M. Anastassova. (2013) *ViPong: Probabilistic Haptic Feedback for Eyes-Free Interaction.* In proc. of IEEE, Worldhaptics 2013, pp. 193-198

C6. C. Hudin, J. Lozada, M. Wiertlewski, V. Hayward. (2012) *Tradeoffs In The Application of Time-Reversed Acoustics to Tactile Stimulation.* In proc. of Eurohaptics 2012. LNCS 7283, Part I, pp. 218-226.
(Best Paper Honorable Mention)

C5. M. Wiertlewski, C. Hudin, V. Hayward. (2011) *On the 1/f Noise and Non-Integer Harmonic Decay of the Interaction of a Finger Sliding on Flat and Sinusoidal Surfaces.* In proc. of IEEE World Haptics 2011, pages 25-30 **(Nominated for Best paper and Best student paper)**

C4. M. Wiertlewski, J. Lozada, E. Pissaloux, and V. Hayward. (2010) *Causality Inversion in the Reproduction of Roughness.* In proc. of Europhaptics 2010, pages 17–24 Springer-Verlag, LNSC 6192 **(Best paper award)**

C3. M. Wiertlewski, J. Lozada, E. Pissaloux, and V. Hayward. (2010) *Tactile Interface for Stimulation of Fingertip via Lateral Traction.* In proc. of Actuators 2010, pages 520–523, 2010

C2. E. Fontaine, R. Velazquez, M. Wiertlewski, and E. Pissaloux. (2006) *Experimental evaluation of a new touch stimulating interface dedicated to information display for visually impaired.* In proc. of ECVHI 2006, pages 55–60

C1. R. Velazquez, E. Pissaloux, and M. Wiertlewski. (2006) *A Compact Tactile Display for the Blind with Shape Memory Alloys.* In proc. of IEEE Int. Conference on Robotics and Automation ICRA 2006, pages 3905–3910

Articles in Periodicals

G2. M. Wiertlewski, V. Hayward. (2011) *Les Interfaces Tactiles.* Biofutur. vol 30/326 pp. 42-43

G1. M. Wiertlewski, G. Trannoy, S. Roselier, J. Lozada, M. Hafez. (2008) *Interfaces Tactiles Vibratoires, Application pour le Handicap.* Sciences et Technologies Pour le Handicap, 2(2)

Patents

P4. M. Wiertlewski, J.Monnoyer *Utilisation de l'impédance mécanique de l'interface de contact pour la détection de transitoires brutaux perçus comme des clics*. Patent pending (fr 18/50449)

P3. M. Wiertlewski, N. Huloux, M. Boyron J.Monnoyer *Mesure des efforts latéraux sur une interface haptique* . Patent pending (fr 18/1850450)

P2. C. Hudin, V. Hayward, J. Lozada, M. Wiertlewski. *Time-reversal tactile stimulation interface.* French patent, (FR 12/55286), and international patent (WO/2013/182611)

P1. M. Wiertlewski, V. Hayward, J. Lozada, *System for simulating a contact with a surface by tactile stimulation*, french patent (FR 10/55479) and international patent (WO/2012/004214)

Seminars, Talks and Public demonstrations

09/19 Demo at the CMMR in Marseille, with Corentin Bernard
07/19 Invited speaker at the Neuroscience of Touch workshop at Worldhaptics 2019 (with Laurence Willemet)
07/19 Work in progress: *Interferometric tribometer* with Corentin Bernard
07/19 Work in progress: *Skin viscoelasticity model* with Laurence Willemet
07/19 Work in progress: *Friction perception* with Ingvars Birznieks
06/18 Demonstration at Eurohaptics 2018, Pisa, Italy, (with Nicolas Huloux)
06/18 Speaker at the "From Fingertip Mechanics to Tactile Sensation" workshop, Eurohaptics 2018, Pisa, Italy
03/18 Interactive Session, Cross Cutting Challenges, Haptics Symposium, 2018, San Francisco, USA
10/17 Invited Speaker at SOFMER, Nancy, France
06/17 Invited Speaker at Trends In Nanotribology, Trieste, Italy
06/17 Semi-Plenary talk, Early Career Award, Worldhaptics 2017, Munich, Germany
06/17 Demonstration at Worldhaptics 2017, Munich, Germany, (with Nicolas Huloux)
06/17 Speaker at the Recent Advances in Modeling Skin Mechanics and Tactile Afferent Responses workshop, Worldhaptics 2017, Munich, Germany
12/16 Speaker at the workshop on Body and Touch in Robots, Brains and Babies, Cergy, France
10/16 Public demonstration at Science en Direct with l'Esprit sorcier, Cité des Sciences, Paris, France
09/16 Public demonstration at Nuit Européenne des Chercheur.es
09/16 Keynote speaker at the Int'l Workshop on Sensor and Actuator Technology, Coburg Germany
09/16 Invited speaker at the Computational Touch Workshop, Paris, France
07/16 Demonstration at Eurohaptics 2016, London, UK, (with Jocelyn Monnoyer)
06/16 Plenary Speaker for the Haptic Session at Actuator 2016, Bremen, Germany
03/16 Seminar at Laboratoire de Mécanique et d'Acoustique (LMA), Marseille, France
12/15 Seminar at the University of Giessen, Germany
06/15 Work in progress poster at the Worldhaptics 2015, Evanston, IL, USA (nominated for Best WIP)
09/14 Invited speaker at the Workshop on Active Sensing, iros 2014, Chicago USA
06/14 Speaker and demo at Eurohaptics 2014, Versailles, France
04/14 Invited speaker at the French American Chamber of Commerce, Chicago, Il, USA
04/14 Seminar at the CEA LIST, Saclay, France
02/14 Speaker at Haptics Symposium 2014 workshop, Houston, TX, USA
02/14 Demo at Haptics Symposium 2014, Houston, USA (with David Meyer)
04/13 Seminar at the Italian Institute of Technology, Genoa, Italy
09/13 Invited speaker, National day of robotic research JNRR, Annecy, France
04/13 Seminar at the ReTouch Lab, Drexel University, Philadelphia, PA, USA
10/12 Poster at Society for Neuroscience, New Orleans, LA, USA (with Anne Klöcker)
07/12 Seminar at LIMS, Northwestern University, Evanston, Il, USA
06/12 Invited speaker at Eurohaptics 2012, Tampere, Finland
12/11 Seminar at the Institute of NeuroSciences, UCL, Louvain, Belgium
11/11 Seminar at the SyMoN lab, University of Birmingham, England
06/11 Oral presentation at Worldhaptics 2011, Istanbul, Turkey
02/11 Oral presentation at the PhD Student days of CEA LIST, Fontenay-Aux-Roses, France
07/10 Oral presentation at Eurohaptics 2010, Amsterdam, the Netherlands
06/10 Oral presentation at Actuator 2010, Bremen, Germany
05/09 Poster at the PhD student day, Université Pierre et Marie Curie, France

Media mentions

2018 NCR – *Virtuele aanraking voelen dankzij haptische sticker*
2016 ASME Magazine – *Adding Textures to Touchscreens*
2016 Tanvas Blog – *Tightening the screws on haptics*
2016 Nature Physics – *Feel the squeeze*
2016 Science Daily – *Ultrasonic vibrations cause fingers to bounce on touchscreens, reducing the friction*
2016 Technoscience – *Des textures virtuelles perceptibles par le toucher sur les écrans*
2016 Northwestern News – *Mystery Solved: The Case of the Slipping Finger*
2016 CNRS/INSB – *Rebondir sur un film d'air : moduler le frottement du doigt avec des ondes ultrasonores*
2014 CNRS Magazine – *L' illusion tactile, une révolution en marche*
2010 Les Défis du CEA – *Textures Virtuelles à Sensation*
2010 L'Usine Nouvelle – *Des Textures Électroniques*
2010 Technology Review – *Touch Screens that Touch Back*