

Juan José Zárate || *Curriculum Vitae*

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Postdoc at AIT Lab, ETH Zurich, Suiza. <http://ait.ethz.ch/>
Born 1983 in Rio Cuarto, Argentina.



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Education

- 08.2013 **PhD in Physics**, Instituto Balseiro, Argentina.
Thesis title: *Development of an infrared bolometer sensor based on MEMS*.
Defense date: August 9, 2013 - Advisor: Hernan Pastoriza.
- 12.2007 **Master in Physics**, Instituto Balseiro, Argentina.
Thesis: *Ratchet of superconducting vortexes on Josephson Junction arrays*.
Defense date: December 18, 2007 - Advisor: Hernan Pastoriza.
- 12.2006 **Degree in Physics** (bachelor), Instituto Balseiro, Argentina.
- 2002–2003 Two years completed in *Telecommunications Engineering*, Universidad Nacional de Río Cuarto, Argentina. *Need it to be admitted at Institutio Balseiro high education program.*

Employment history

- 01.2018–present **Research Scientist / oberassistent-postdoc** at Advanced Interactive Technologies (AIT) Lab, ETH Zurich, Switzerland. Lab Professor: Dr. Otmar Hilliges. *HCI-Haptics*: development of HCI systems to provide kinesthetic and tactile feedback. Wearable haptics. Haptic perceptual space.
- 01.2014–12.2017 **Research Scientist / postdoc** at Microsystem for Space Technologies Laboratory (LMTS), École Polytechnique Fédérale de Lausanne (EPFL), Switzerland. Lab Professor: Dr. Herbert Shea. *Haptics*: development of haptic displays to provide graphical information to blind and visually impaired users. *Telecom*: development of a reconfigurable antenna for satellite communications based on an array of shape memory polymers actuators. *Teaching assistant*: 2015 - 2016.
- 10.2013–11.2013 **Internship** at Université Paris Diderot, Paris, France. Host professors: Jean-Christophe Hamilton and Andrea Tartari.
- 04.2011–05.2011 **Internship** at Universidad Federal de Minas Gerais, Belo Horizonte, Brazil. Eulasur Exchange Program. Host professor: Wagner Nunes Rodrigues.
- 03.2008–08.2013 **PhD candidate** at the Low Temperature Physics Laboratory, Centro Atómico Bariloche, Argentina. Advisor: Dr. Hernán Pastoriza. *Project*: development of a microfabricated infrared sensor. Activities included polymer MEMS process development, system evaluation, FEM and analytical validation, MEMSCAP design and testing. *Teaching assistant*: Computing programming, Computational physics, Introduction to MEMS.
- 08.2006–12.2007 **MSc candidate** at the Low Temperature Physics Laboratory, Centro Atómico Bariloche, Argentina. Advisor: Dr. Hernán Pastoriza. *Project*: rectification of superconducting excitations using microfabricated networks. Activities included superconductivity experiments and microfabrication.

Selected peer-reviewed scientific journals

- N. Besse, S. Rosset, J. Zarate, E. Ferrari, L. Brayda and H. Shea. *Understanding graphics on a scalable latching assistive haptic display using a shape memory polymer membrane*, IEEE Transactions on Haptics, Volume 11, Issue 1 (2017). doi: [10.1109/TOH.2017.2767049](https://doi.org/10.1109/TOH.2017.2767049).
- N. Besse, S. Rosset, J. Zarate and H. Shea. *Flexible active skin: large reconfigurable arrays of individually addressed shape memory polymer actuators*, Advanced Materials Technologies, Volume 2, Issue 10 (2017). doi: [10.1002/admt.201700102](https://doi.org/10.1002/admt.201700102). Video.
- J. J. Zárate and H. Shea. *Using pot-magnets to enable stable and scalable electromagnetic tactile displays*, IEEE Transactions on Haptics, Volume: PP, Issue: 99 (2016). doi:[10.1109/TOH.2016.2591951](https://doi.org/10.1109/TOH.2016.2591951)
- J. J. Zárate, G. Tosolini, M. De Vittorio and H. Shea. *Optimization of the force and power consumption of a micr fabricated magnetic actuator*, Sensors and Actuators A: Physical, vol. 234, pp 57-64 (2015). doi:[10.1016/j.sna.2015.08.007](https://doi.org/10.1016/j.sna.2015.08.007)
- K. Ogando, N. La Forgia, J. J. Zárate and H. Pastoriza. *Design and Characterization of a Fully Compliant Out-of-Plane Thermal Actuator*, Sensors and Actuators A: Physical, Volume 183 (2012). doi: [10.1016/j.sna.2012.05.028](https://doi.org/10.1016/j.sna.2012.05.028)

Selected peer-reviewed conference proceedings

- V. Vechev, J.J. Zarate, D. Lindlbauer, R. Hinchet, H. Shea, O. Hilliges, *TacTiles: Dual-mode Low-power Electromagnetic Actuators for Rendering Continuous Contact and Spatial Haptic Patterns in VR*, IEEE VR 2019, March 23-27, 2019. PDF, Video
- F. Pece, J.J. Zarate, V. Vechev, N. Besse, O. Gudozhnik, H. Shea, O. Hilliges, *MagTics: Flexible and Thin Form Factor Magnetic Actuators for Dynamic and Wearable Haptic Feedback*, in Proceeding of UIST 2017, October 22-25, 2017. doi: [10.1145/3126594.3126609](https://doi.org/10.1145/3126594.3126609). Video.
- J.J. Zarate, O. Gudozhnik, A. S. Ruch, H. Shea. *Keep in Touch: Portable Haptic Display With 192 High Speed Taxels*, CHI 2017, May 2017, Denver, USA. doi: [10.1145/3027063.3052957](https://doi.org/10.1145/3027063.3052957). Press release.
- N. Besse, J. J. Zarate, S. Rosset and H. Shea, *Flexible Haptic Display with 768 Independently Controllable Shape Memory Polymers Taxels*, in Proceeding of Transducers'17. Kaohsiung (Taiwan), June 18-22, 2017. doi: [10.1109/TRANSDUCERS.2017.7994054](https://doi.org/10.1109/TRANSDUCERS.2017.7994054)

Patents and licenses

- N. Besse, J. J. Zarate, S. Rosset and H. Shea. *Device Having an Array of Latching Micro Actuators*, US Patent 15635225, filed on June 28, 2017. Applicant: École Polytechnique Fédérale de Lausanne (EPFL).
- J. J. Zarate and H. Shea. *An Electromagnetic Actuator*, European Patent EP17163181.5, filed on March 17 2017. Applicant: École Polytechnique Fédérale de Lausanne (EPFL).

Prizes, awards, fellowships

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| 03.2019 | | <i>Mobility Grant</i> , Leading House for the Latin American Region, Univ. St. Gallen, Switzerland. |
| 10.2017 | | <i>Enable Grant</i> , EPFL Technology Transfer Office. Switzerland. |
| 03.2011–04.2013 | | CONICET (Argentinian National Research Council) scholarship as PhD candidate. |
| 12.2012 | | First prize in category project-idea for the business plan competition <i>Emprendimientos Innovadores 2012</i> , Banco de la Nación Argentina and Fundación Empretec. Project: <i>INGKA Educación</i> . |
| 03.2008–03.2011 | | Invap S.E. scholarship for first years as PhD candidate. |
| 09.2009 | | First prize in <i>IB50K</i> competition for technology business plans. Project <i>Nanodetección</i> . |