

# Emmanuel Senft

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## Curriculum Vitae

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### CONTACT

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Scholar <https://scholar.google.co.uk/citations?user=Yw1tGf4AAAAJ&hl=en>

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### RESEARCH STATEMENT

Robots Learning to Interact My research is focused on exploring ways to allow robots to learn complex policies in the real world, such as behaving socially in a Human-Robot Interaction. Learning by interacting in the real world is a challenging topic, because classical approaches such as Reinforcement Learning or learning from big data can not be used because of their dependence on random exploration (leading to negative impact on the world) or the lack of large dataset for real world interaction. Part of the DREAM project, I am using Robot-Assisted Therapy and robots in education as scenarios to provide realistic situations, constraints and problems to guide the design and the evaluation SPARC, the interaction framework used to combine human control and robot learning.

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### EDUCATION

2014-present **PhD**, *Plymouth University*, Plymouth, UK, Title: Teaching Robots Social Autonomy From In Situ Human Supervision.  
Supervisory team: Professor Tony Belpaeme, Dr. Paul Baxter and Dr Séverin Lemaignan

2011–2013 **Master of Science in Robotic and Autonomous Systems**, *Swiss Federal Institute of Technology Lausanne (EPFL)*, Lausanne, Switzerland, Grade 5.5/6.  
With Minor in Area and Cultural Studies.

2008–2011 **Bachelor of Science in Microengineering**, *Swiss Federal Institute of Technology Lausanne (EPFL)*, Lausanne, Switzerland, Grade 5.29/6.

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### MASTER'S THESIS

Title *Hybrid Optimisation with Roombots* (Maximum possible grade obtained: 6/6)

Professor Auke J. Ijspeert

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## SELECTED PUBLICATIONS

- 2017 **Supervised Autonomy for Online Learning in Human-Robot Interaction** - E. Senft, P. Baxter, J. Kennedy, S. Lemaignan and T. Belpaeme - Pattern Recognition Letters, 2017.
- How to build a supervised autonomous system for robot-enhanced therapy for children with autism spectrum disorder** - P.G. Esteban, ... , E. Senft, ... , T.Ziemke - Paladyn, Journal of Behavioral Robotics. De Gruyter Open, 2017.
- 2016 **From Characterising Three Years of HRI to Methodology and Reporting Recommendations** - P. Baxter, J. Kennedy, E. Senft, S. Lemaignan and T. Belpaeme - Proc. 11th ACM/IEEE International Conference on Human-Robot Interaction (alt.HRI) (HRI), New Zealand, Christchurch, March 2016.
- Social Robot Tutoring for Child Second Language Learning** - J. Kennedy, P. Baxter, E. Senft and T. Belpaeme - Proc. 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI), New Zealand, Christchurch, March 2016.
- 2015 **SPARC: Supervised Progressively Autonomous Robot Competencies** - E. Senft, P. Baxter, J. Kennedy and T. Belpaeme. - Proc. 7th International Conference of Social Robotics (ICSR), Paris, France, October 2015.
- Human-Guided Learning of Social Action Selection for Robot-Assisted Therapy** - E. Senft, P. Baxter and T. Belpaeme. - Proc. 4th Workshop on Machine Learning for Interactive Systems (MLIS), Lille, France, July 2015.
- 2013 **An experimental study on the role of compliant elements on the locomotion of the self-reconfigurable modular robots Roombots.** - Vespignani, E. Senft, S. Bonardi, R. Möckel and A. Ijspeert. - Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Tokyo, Japan, November 2013.

Complete list with pdf <https://emmanuel-senft.github.io/publication.html>

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## PROFESSIONAL EXPERIENCE

- since 2015 **Reviewer**, *Scientific Reports, JIST, ICRA, SBLL, MECH, IBERDISCAP, HAI, JHRI, IS, HRI, ICSR, HUMANOID, RO-MAN, TAROS.*
- 2015-2017 **Demonstrator**, *ROCO 318 - Mobile and Humanoid Robots*, Plymouth University, UK.  
Leading practical work on bipedal gait design and control for 3rd year students.
- 2014 **Construction Assistant**, *Biorobotic Lab, EPFL*, Lausanne, Switzerland, Two months.  
Development of a controller using a camera and an IMU as inputs to allow autonomous docking on a passive grid using Roombots.
- 2012-2013 **Internship**, *EPFL+ECAL Lab*, Lausanne, Switzerland, Four months.  
Development of a driver for a multitouch tactile wall for a permanent interactive installation at the Red Cross Museum, Geneva, Switzerland.

## TECHNICAL SKILLS

Advanced	Python, ROS, QML, C++, Machine Learning (Neural Networks and Reinforcement Learning), Robotics, Nao, Human-Robot Interaction, Study Design, Academic Writing
Intermediate	Solidworks, ProEngineer, MatLab, C, JAVA, Pepper and YARP
Basic	Robot Simulator (Webots) and Assembly

## Languages

French	<b>Mother tongue</b>	
English	<b>Advanced</b>	<i>Conversationally fluent and technical</i>
German	<b>Basic</b>	<i>Level A2</i>
Italian	<b>Elementary</b>	<i>Level A1</i>
Mandarin	<b>Elementary</b>	<i>Level A1</i>

## OTHER EXPERIENCE

2016-2017	<b>Comittee member</b> , <i>Karate-UPSU</i> , Plymouth University, UK. Treasurer for the university karate club.
2014-2018	<b>Member</b> , <i>A+E</i> , Plymouth University, UK. Mountaineering, climbing and caving student club.
2014-2018	<b>Member</b> , <i>Karate-UPSU</i> , Plymouth University, UK. Karate student club.
2010-2013	<b>Comittee member</b> , <i>Jdr-Poly</i> , EPFL. Association for the promotion of Role Playing Games and Board Games on the campus.
2007-2013	<b>Scout Team Leader</b> , <i>Eclaireuses et Eclaireurs Unionistes de France</i> , Douvaine, France. Team management and leadership, organisation of events with 8-12 or 12-16 years old children with legal responsibility, member since 1998.
2008-2012	<b>Member</b> , <i>Robopoly</i> , EPFL. Robotic Association.