

# Emmanuel Senft

Curriculum Vitae – May 2021

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<https://emmanuel-senft.github.io>

## RESEARCH MISSION

To develop human-centered robotic tools for end-users to design effective robot behaviors in situ, to explore challenging environments with high cost of failure, large variability of tasks, and real-world application, and to enable robots to be used by anyone to impact positively our society.

## EMPLOYMENT

- 2019–Current **Research Associate**, *People and Robots Lab, University of Wisconsin–Madison, USA*, PI: Prof. Bilge Mutlu and Prof. Michael Gleicher (since Oct. 2019).
- 2019 **Cooperate Researcher**, *JSPS Summer program, IRC - ATR, Japan*, PI: Prof. Takayuki Kanda (June to August 2019).
- Research Fellow**, *Plymouth University, UK*, PI: Prof. Tony Belpaeme.  
part-time (January to March 2019)
- 2018 **Research Assistant**, *Plymouth University, UK*, PI: Prof. Tony Belpaeme.

## EDUCATION

- 2014–2018 **PhD**, *Plymouth University, Plymouth, UK, Teaching Robots Social Autonomy From In Situ Human Supervision*.  
Supervisory team: Prof. Tony Belpaeme, Dr. Paul Baxter, and Dr Séverin Lemaignan
- 2011–2013 **Master of Science in Robotic and Autonomous Systems**, *EPFL (École Polytechnique Fédérale de Lausanne)*, Switzerland, with Minor in Area and Cultural Studies.  
*Master thesis with Prof. Auke J. Ijspeert*
- 2011–2013 **Bachelor of Science in Microengineering**, *EPFL (École Polytechnique Fédérale de Lausanne)*, Switzerland.

## AWARD & FUNDING

- 2021 **National Robotics Initiative 3.0**: Collaboration on writing two research grants (under review).  
*Enabling Robotic Assistance in Construction Work*  
*Designing Social Companion Robots for Long-term Interaction*
- 2019 **JSPS Summer Program**: 2 months research program with Prof. Takayuki Kanda at ATR, Japan.
- 2019 **Queen Mary UK Best PhD in Robotics Award**: Second position.

## INVITED TALKS and PRESENTATIONS

- 2021 **NASA Transformative Aeronautics Concepts Program (TACP) Showcase** (online)
- 2020 **HRI Lab - University of Chicago** (online)
- 2019 **CHILI Lab - EPFL** (Lausanne, Switzerland)  
**Robot Learning and Interaction Lab - IDIAP** (Martigny, Switzerland)

## SELECTED PUBLICATIONS

### Journals

- 2021 **Corrective Shared Autonomy for Addressing Task Variability**.  
M. Hagenow, E. Senft, R. Radwin, M. Gleicher, B. Mutlu, and M. Zinn  
IEEE Robotics and Automation Letters 6 (2), 3720-3727.

- A Socially Assistive Robot for Long-Term Cardiac Rehabilitation in the Real World.**  
N. Céspedes, B. Irfan, **E. Senft**, C. A. Cifuentes, L. F. Gutierrez, M. Rincon-Roncancio, T. Belpaeme, and M. Múniera,  
Frontiers in Neurorobotics 15, 21.
- 2020 **Social Assistive Robots: Assessing the Impact of a Training Assistant Robot in Cardiac Rehabilitation.**  
J. Casas, **E. Senft**, L. F. Gutiérrez, M. Rincón-Roncancio, M. Múniera, T. Belpaeme, and C. A. Cifuentes  
International Journal of Social Robotics.
- The DREAM Dataset: Supporting a Data-Driven Study of Autism Spectrum Disorder and Robot Enhanced Therapy.**  
E. Billing, ... , **E. Senft**, ... , and T. Ziemke  
PloS one 15 (8), e0236939.
- 2019 **Teaching Robots Social Autonomy From in Situ Human Guidance.**  
**E. Senft**, S. Lemaignan, P.E. Baxter, and T. Belpaeme  
Science Robotics 4 (35).
- Generating Spatial Referring Expressions in a Social Robot: Dynamic vs Non-Ambiguous.**  
CD Wallbridge, S. Lemaignan, **E. Senft**, and T. Belpaeme  
Frontiers in Robotics and AI 6 (2019): 67.
- Robot-Enhanced Therapy: Developing and Validating a Supervised Autonomous Robotic System for Autism Spectrum Disorders Therapy.**  
HL. Cao, ... , **E. Senft**, ... , and T. Ziemke  
IEEE Robotics & Automation Magazine, vol. 26, no. 2.
- 2018 **The PlnSoRo dataset: Supporting the Data-Driven Study of Child-Child and Child-Robot Social Dynamics.**  
S. Lemaignan, C. Edmunds, **E. Senft**, and T. Belpaeme  
PloS one 13 (10), e0205999.
- A Personalized and Platform-Independent Behavior Control System for Social Robots in Therapy: Development and Applications.**  
H. L. Cao, G. Van de Perre, J. Kennedy, **E. Senft**, P. Gómez Esteban, A. De Beir, R. Simut, T. Belpaeme, D. Lefeber, and B. Vanderborght  
IEEE Transactions on Cognitive and Developmental Systems 11 (3).
- 2017 **Supervised Autonomy for Online Learning in Human-Robot Interaction.**  
**E. Senft**, P. Baxter, J. Kennedy, S. Lemaignan, and T. Belpaeme  
Pattern Recognition Letters.
- 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.
- Conferences
- 2020 **Would You Mind Me if I Pass by You? Socially-Appropriate Behaviour for an Omni-based Social Robot in Narrow Environment.**  
**E. Senft**, S. Satake, and T. Kanda  
HRI, 2020.
- 2017 **Child Speech Recognition in Human-Robot Interaction: Evaluations and Recommendations.**  
J. Kennedy, S. Lemaignan, C. Montassier, P. Lavalade, B. Irfan, F. Papadopoulos, **E. Senft**, and T. Belpaeme  
HRI, 2017.

- 2016 **Social Robot Tutoring for Child Second Language Learning.**  
J. Kennedy, P. Baxter, **E. Senft**, and T. Belpaeme  
HRI, 2016.
- 2015 **SPARC: Supervised Progressively Autonomous Robot Competencies.**  
**E. Senft**, P. Baxter, J. Kennedy, and T. Belpaeme.  
ICSR, 2015.
- [Link to complete list with pdf](#)

## PRESS COVERAGE

- 2020 **Financial Times.** Opinion sought for “*How AI eases teachers’ heavy workloads*”  
**Teacher Magazine.** Interview for and research covered in “*Using robots to assist teachers and improve student learning*”
- 2019 **Financial Times.** Interview for and research covered in “*Robot trained to be useful teaching assistant in three hours*”  
**The Telegraph.** Research covered in “*British schools test ‘robot teachers’ to tackle staff shortage*”

## ACADEMIC SERVICES

### EDITORIAL WORK

Frontiers in Robotics & AI, *Guest Editor*

### REFeree SERVICE

#### *Journals*

Scientific Reports  
Frontiers in Robotics and AI  
Robotics and Automation Letters  
Journal of Human-Robot Interaction  
IEEE Transactions in Human-Robot Interaction  
International Journal of Social Robotics  
Mechatronics  
Intelligent Service Robotics  
Interaction Studies Journal  
Behaviour and Interaction Technology

#### *Conferences*

ACM/IEEE Human-Robot Interaction Conference (HRI)  
Robotics: Science and Systems Conference (RSS)  
IEEE International Conference on Robotics and Automation (ICRA)  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)  
IEEE-RAS Conference on Humanoid Robots  
International Conference on Social Robotics (ICSR)  
IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)  
International Conference on Human-Agent Interaction (HAI)  
Towards Autonomous Robotic Systems Conference (TAROS)  
IEEE International Symposium on Robot-Human Interactive Communication (Ro-Man)

### EVENT ORGANIZATION

Wisconsin Robotics Seminar Series, *Organizer*  
AAMAS 2019, *PC Member*  
AAAI Symposium - AI-HRI (2017-), *Program Chair / Committee member*  
HRI Workshop - Robots in Therapy and Care (2019), *Committee member*

### TEACHING

Practical ROCO 318 - Mobile and Humanoid Robots at the University of Plymouth, *Demonstrator* (2015–2017)

## MENTORING

**Graduate Students:** Michael Hagenow, Kevin Welsh, Anna Konstant, and Prajna Bhat

**Undergraduate Students:** Titus Smith, Yash Hindka

## COLLABORATIONS

### EDUCATION

Local schools (Plymouth, UK). Developing and evaluating robot tutoring solutions.

### HEALTHCARE

Therapists (Babeş-Bolyai University, Roumania), industry (Softbank Robotics EU) and academics in EU FP7 project. Developing therapy-driven robot applications for children with ASD.

Clinicians and hospital staff (Fundacion Cardioinfantil, Bogota, Colombia) and academics. Robot behaviours for cardiac rehabilitation.

### MANUFACTURING

The Boeing Company, NASA, and academics in a NASA ULI project. Designing robot platform for collaborative aircraft manufacturing.

### TELEVISION

Channel 4 (UK). Designing a teleoperation interface for the Pepper robot for the show: The Secret Life of 4 and 5 Year Olds.

## TECHNICAL SKILLS

Research	Academic writing, Study Design, Machine Learning (ANN, RL, Interactive Machine Learning)
Programming	Python, QML, C++, ROS, YARP, Matlab
Robot	Nao, Pepper, Robovie, Panda, Roombots
Software	Solidworks, ProEngineer, Onshape, Blender, Cura (3D printing)

## LANGUAGES

French	<b>Mother tongue</b>	
English	<b>Advanced</b>	<i>Con conversationally fluent and technical</i>
Mandarin	<b>Basic</b>	<i>Level A2</i>
German	<b>Basic</b>	<i>Level A2</i>

## INTERESTS

Martial Arts	Judo, Kick-Boxing, Kung-fu, Vo-vietnam, Karate (Brown Belt)
Climbing	Indoor and outdoor, from bouldering to leading
Skiing	Ski and Snowboard
Scouts	Team Leader from 2007 to 2013, member from 1998 to 2013