

Séverin Lemaignan

Cognition for Social Robotics

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36 years old



Scientific Focus **Robot cognition and decision making for safe social interaction:** data-driven understanding of social interactions; explainable AI; ethics of safe human-robot interactions; robust human-robot multi-modal interaction; symbolic and sub-symbolic knowledge representation.

Keywords **Social Robotics, Robotic Cognition, Safe & Robust Human-Robot Interaction, Cognitive Architectures**

Education & Research Activities

- Apr. 2018– **Senior Research Fellow in Robotics and Artificial Intelligence, Bristol Robotics Lab, United Kingdom.**
Supervision of the Human-Robot Interaction research group; Supervision of the Driverless Vehicle research group.
Directly managing 20+ students and early career researchers.
- 2017–2018 **Lecturer in Robotics, Plymouth University, Plymouth, United Kingdom.**
- 2015–2017 **EU Marie Skłodowska-Curie Post-doctoral fellow, Centre for Neural Systems and Robotics, Plymouth University, Plymouth, United Kingdom.**
Development and Implementation of a Theory of Mind for robots.
- 2013–2015 **Post-doctoral fellow, CHILI, EPFL, Lausanne, Switzerland.**
Interaction with Robots in Learning Environments – Supervision of the robotic group.
- 2012–2013 **Post-doctoral fellow, LAAS-CNRS, Toulouse, France.**
Spatial and Temporal Reasoning for Cognitive Robotic Architectures.
- 2008–2012 **Joint German-French PhD in Cognitive Robotics, LAAS-CNRS, Toulouse, France / Technical University of Munich, Germany.**
with High Distinction “Summa Cum Laude” – awarded CNRS’ **Best PhD in Robotics 2012**
Supervisors: Pr. Rachid Alami, CNRS; Pr. Michael Beetz, TUM.
- 2006–2007 **Research Engineer, INRIA, Paris, France.**
Development of semantic-aware control architectures for autonomous vehicles.
- 2002–2006 **Joint German-French MSc of Engineering, Karlsruhe Institute of Technology / ENSAM ParisTech.**
- 2004–2005 **MSc Artificial Intelligence for Learning Technologies, University Paris V, College of Mathematics and Computer Sciences, With Honours.**

Scientific Impact & Dissemination Activities

Highly respected figure in the Intelligent Robots community, invited to high-profile editorial roles.

As of Jul 2019, 70+ publications, 1800+ citations, h -index = 22, $i10$ -index = 34 .

Recent International expert & advisory roles

- 2019 **Invited Expert in Child-Robot Interaction, robot4SEN project, VTC, Hong Kong.**
- 2019– **Invited member on the EPSRC Associate Peer Review College.**
- 2019 **Invited PhD dissertation examiner, University of Bielfeld, Germany.**
- 2019 **Invited PhD dissertation examiner, University of Örebro, Sweden.**
- 2018– **Senior Scientific Adviser for South-West SMEs, EU H2020 SABRE project.**
- 2017– **EU H2020 member on the Peer Review College.**

National & International Editorial roles

- 2019–2020 **Organisation of the IEEE/ACM HRI2020 conference, local chair.**
- 2019– **UK TAROS conference on Autonomous Robotic Systems, co-coordinator.**
- 2018– **Associate Editor, Frontiers in Robotics and AI.**
- 2016– **Program Committee, IEEE/ACM HRI 2016, 2017, 2018, 2019.**
- 2016– **Associate Editor, IEEE IROS 2016, 2017, 2018.**

- 2018 **Program Committee, IJCAI 2017, IJCAI 2018, HAI 2018, AAMAS 2019.**
- 2017 **alt.HRI chair, HRI 2017.**
- 2016 **Program Chair, Workshop on Cognitive Architectures for Social HRI, HRI 2016.**
- 2013 **Steering Committee, Intl. Workshop on MORSE for HRI, HRI 2014.**
- 2013 **Program Committee, Workshop on Developmental Social Robotics, IROS 2013.**
- 2012 **Steering Committee, Intl. Workshop on MORSE and its Applications.**
- 2008–2009 **Steering Committee, Cognitive Sciences' Young Researchers Conference 2009.**
- Policy shaping
- 2018–2019 Involved in BRL's strategic discussion about Intelligent Manufacturing; HRI systems; Assistive robotics with **key policy makers (BEIS Secretary of State Greg Clark; Minister of State for Universities, Science, Research and Innovation Chris Skidmore; West of England CA Tim Bowles; EPSRC Portfolio manager for Robotics Clara Morri)**

Recent International Keynotes and Invited Talks

- **Robots for Learning – invited speaker, 2019**
Robot4SEN, Vocational Training Council, Kong Kong
- **From Big Data to Social Robotics – keynote, 2019**
UK RAS conference, Loughborough, UK
- **Big Data and Social Robotics – invited speaker, 2018**
LAAS-CNRS, Toulouse, France
- **Child-robot Social Interactions – invited speaker, 2018**
IIT, Genoa, Italy
- **Theory of Mind and Joint-action – keynote, 2018**
Robotics Science and System, Pittsburgh, USA
- **Immersive Technologies for Safe Driverless Vehicles – invited speaker, 2018**
South West Creative Technology Network, Bristol, UK
- **Human-Robot interaction in the context of safe driverless vehicles – invited speaker, 2018**
HRI Symposium, Stanford University, Stanford, USA
- **Robots for Learning – keynote, 2018**
Symposium on Robots for Language Learning, Koç University, Istanbul, Turkey

Awards and Honours

- HRI'2017 **Best Paper Award 'Design'.**
- HRI'2016 **Best Paper Award 'Methods and Theory'.**
- AAAI'2015 **Best Video Award in Artificial Intelligence.**
- AAAI'2014 **Best Late Breaking Report Award.**
- 2012 **Best PhD in Robotics, CNRS.**
- 2012 **PhD with High Distinction, ("Summa Cum Laude"), TU Munich.**
- Ro-Man'2010 **Best Paper Award.**

Publications

International peer-reviewed journals

- Senft, E., Lemaignan, S., Baxter, P., Bartlett, M., Belpaeme, T.
Teaching robots social autonomy from in situ human guidance
Science Robotics 2019. To appear.
- Wallbridge, C., Lemaignan, S., Senft, E., Belpaeme, T.
Generating Spatial Referring Expressions in a Social Robot: Dynamic vs Non-Ambiguous
Frontiers in AI and Robotics 2019. To appear.
- Bartlett, M., Edmunds, C. E. R., Belpaeme, T., Thill, S., Lemaignan, S.
What Can You See? Identifying Cues on Internal States from the Kinematics of Social Interactions
Frontiers in AI and Robotics 2019.

- Flook, R., Shrinah, A., Wijnen, L., Eder, K., Melhuish, C., Lemaignan, S.
On the Impact of Different Types of Errors on Trust in Human-Robot Interaction
Interaction Studies 2019.
- Lemaignan, S., Edmunds E. R., C., Senft, E., Belpaeme, T.
The PInSoRo dataset: Supporting the data-driven study of child-child and child-robot social dynamics
PLOS ONE 2018.
- Senft, E., Baxter, P., Kennedy, J., Lemaignan, S., Belpaeme, T.
Supervised Autonomy for Online Learning in Human-Robot Interaction
Pattern Recognition Letters 2017.
- Lemaignan, S., Warnier, M., Sisbot, E.A., Clodic, A., Alami, R.
Artificial Cognition for Social Human-Robot Interaction: An Implementation
Artificial Intelligence 2017.
- Lemaignan, S., Jacq, A., Hood, D., Garcia, F., Paiva, A., Dillenbourg, P.
Learning by Teaching a Robot: The Case of Handwriting
IEEE Robotics and Automation Magazine 2016.
- Dillenbourg, P., Lemaignan, S., Sangin, M., Nova, N., Molinari, G.
The Symmetry of Partner Modelling
Intl. J. of Computer-Supported Collaborative Learning 2016.
- Lemaignan, S.
Grounding the Interaction: Knowledge Management for Interactive Robots
Künstliche Intelligenz 2013.
- Lallée, S., Pattacini, U., Lemaignan, S., Lenz, A., Melhuish, C., Natale, L., Skachek, S., Hamann, K., Steinwender, J., Sisbot, E.A., Metta, G., Pipe, T., Alami, W., Warnier, M., Guitton, J., Warneken, F., Dominey, P.F.
Towards a Platform-Independent Cooperative Human-Robot Interaction System: III. An Architecture for Learning and Executing Actions and Shared Plans
IEEE Transactions on Autonomous Mental Development 2012.
- Lemaignan, S., Ros, R., Sisbot, E. A., Alami, R., Beetz M.
Grounding the Interaction: Anchoring Situated Discourse in Everyday Human-Robot Interaction
International Journal of Social Robotics 2011.

International peer-reviewed conference articles

- Sallami, Y., Lemaignan, S., Clodic, A., Alami, R.
Simulation-based physics reasoning for consistent scene estimation in an HRI context
IEEE IROS 2019.
- Winkle, K., Lemaignan, S., Caleb-Solly, P., Leonards, U., Turton, A., Bremner, P.
Effective Persuasion Strategies for Socially Assistive Robots
ACM/IEEE HRI 2019.
- Wallbridge, C., van den Berghe, R., Hernández García, D., Kanero, J., Lemaignan, S., Edmunds, C., Belpaeme, T.
Using a Robot Peer to Encourage the Production of Spatial Concepts in a Second Language
HAI 2018.
- Lemaignan, S., Sallami, Y., Wallbridge, C., Clodic, A., Alami, R.
underworlds: Cascading Situation Assessment for Robots
IEEE IROS 2018.
- Senft, E., Lemaignan, S., Bartlett, M., Baxter, P., Belpaeme, T.
Robots in the classroom: Learning to be a Good Tutor
ACM/IEEE HRI – Workshop R4L 'Robots for Learning' 2018.
- Irfan, B., Kennedy, J., Lemaignan, S., Papadopoulos, F., Senft, E., Belpaeme, T.
Social psychology and Human-Robot Interaction: an Uneasy Marriage
alt.HRI 2018.
- Wallbridge, C., Lemaignan, S., Belpaeme, T.
Qualitative Review of Object Recognition Techniques for Tabletop Manipulation
HAI 2017.
- Senft, E., Lemaignan, S., Baxter, P., Belpaeme, T.
Toward Supervised Reinforcement Learning with Partial States for Social HRI
AAAI Fall Symposium – AI-HRI 2017.
- Özgür, A., Lemaignan, S., Johal, W., Beltran, M., Briod, M., Pereyre, L., Mondada, F., Dillenbourg, P.
Cellulo: Versatile Handheld Robots for Education
ACM/IEEE HRI 2017.

- Kennedy, J., Lemaignan, S., Montassier, C., Lavalade, P., Irfan, B., Papadopoulos, F., Senft, E., Belpaeme, T.
Child Speech Recognition in Human-Robot Interaction: Evaluations and Recommendations
ACM/IEEE HRI 2017.
- Chandra, S., Alves-Oliveira, P., Lemaignan, S., Sequeira, P., Paiva, A., Dillenbourg, P.
Children's Peer Assessment and Self-disclosure in the Presence of an Educational Robot
IEEE Ro-Man 2016.
- Hostettler, L., Özgür, A., Lemaignan, S., Dillenbourg, P., Mondada, F.
Real-Time High-Accuracy 2D Localization with Structured Patterns
IEEE ICRA 2016.
- Baxter, P., Kennedy, J., Senft E., Lemaignan, S., Belpaeme, T.
From Characterising Three Years of HRI to Methodology and Reporting Recommendations
alt.HRI 2016.
- Lemaignan, S., Garcia, F., Jacq, A., Dillenbourg, P.
From Real-time Attention Assessment to "With-me-ness" in Human-Robot Interaction
ACM/IEEE HRI 2016.
- Jacq, A., Lemaignan, S., Garcia, F., Dillenbourg, P., Paiva, A.
Building Successful Long Child-Robot Interactions in a Learning Context
ACM/IEEE HRI 2016.
- Baxter, P., Ashurst, E., Kennedy, J., Senft, E., Lemaignan, S., Belpaeme, T.
The Wider Supportive Role of Social Robots in the Classroom for Teachers
WONDER Workshop - ICSR 2015.
- Lemaignan, S., Fink, J., Mondada, F., Dillenbourg, P.
You're Doing It Wrong! Studying Unexpected Behaviors in Child-Robot Interaction
ICSR 2015.
- Lemaignan, S., Hosseini, A., Dillenbourg, P.
pyRobots: a Toolset for Robot Executive Control
IEEE IROS 2015.
- Karim, M. E., Lemaignan, S., Mondada, F.
A Review: Can Robots Reshape K-12 STEM Education?
ARSO 2015.
- Chandra, S., Alves-Oliveira, P., Lemaignan, S., Sequeira, P., Paiva, A., Dillenbourg, P.
Can a Child Feel Responsible for Another in the Presence of a Robot in a Collaborative Learning Activity?
IEEE Ro-Man 2015.
- Lemaignan, S., Dillenbourg, P.
Mutual Modelling in Robotics: Inspirations for the Next Steps
ACM/IEEE HRI 2015.
- Hood, D., Lemaignan, S., Dillenbourg, P.
When Children Teach a Robot to Write: An Autonomous Teachable Humanoid Which Uses Simulated Handwriting
ACM/IEEE HRI 2015.
- Fink, J., Rétornaz, P., Vaussard, F., Wille, F., Franinovi, K., Berthoud, A., Lemaignan, S., Dillenbourg, P., Mondada, F.
Which Robot Behavior Can Motivate Children to Tidy up Their Toys? Design and Evaluation of "Ranger"
ACM/IEEE HRI 2014.
- Lemaignan, S., Hanheide, M., Karg, M., Khambhaita, H., Kunze, L., Lier, F., Lütkebohle, I., Milliez, G.
Simulation and HRI - Recent Perspectives with the MORSE Simulator
SIMPAR 2014.
- Lemaignan, S., Fink, J., Dillenbourg, P., Braboszcz, C.
The Cognitive Correlates of Anthropomorphism
Workshop A bridge between Robotics and Neuroscience - HRI 2014.
- Lemaignan, S., Alami, R.
Explicit Knowledge and the Deliberative Layer: Lessons Learned
IEEE IROS 2013.
- Echeverria, G., Lemaignan, S., Degroote, A., Lacroix, S., Karg, M., Koch, P., Lesire, C., Stinckwich, S.
Simulating complex robotic scenarios with MORSE
SIMPAR 2012.
- Warnier, M., Guitton, J., Lemaignan, S., Alami, R.
When the Robot Puts Itself in Your Shoes. Managing and Exploiting Human and Robot Beliefs
IEEE Ro-Man 2012.

- Alami, R., Warnier, M., Guitton, J., Lemaignan, S., Sisbot, E. A.
When the robot considers the human...
ISRR 2011.
- Lallée, S., Pattacini, U., Boucher, J.D., Lemaignan, S., Lenz, A., Melhuish, C., Natale, L., Skachek, S., Hamann, K., Steinwender, J., Sisbot, E.A., Metta, G., Alami, R., Warnier, M., Guitton, J., Warneken, F., Dominey, P.F.
Towards a Platform-Independent Cooperative Human-Robot Interaction System: II. Perception, Execution and Imitation of Goal Directed Actions
IEEE IROS 2011.
- Lemaignan, S., Ros, R., Alami, R., Beetz, M.
What are you talking about? Grounding dialogue in a perspective-aware robotic architecture
IEEE Ro-Man 2011.
- Echeverria, G., Lassabe, N., Degroote, A., Lemaignan, S.
Modular Open Robots Simulation Engine: MORSE
IEEE ICRA 2011.
- Lemaignan, S., Ros, R., Mösenlechner, L., Alami, R., Beetz, M.
ORO, a Knowledge Management Module for Cognitive Architectures in Robotics
IEEE IROS 2010.
- Ros, R., Lemaignan, S., Sisbot, E. A., Alami, R., Steinwender, J., Hamann, K., Warneken, F.
Which One? Grounding the Referent Based on Efficient Human-Robot Interaction
IEEE Ro-Man 2010.
- Lallée, S., Lemaignan, S., Lenz, A., Melhuish, C., Natale, L., Skachek, S., van Der Zant, T., Warneken, F., Dominey, P.F.
Towards a Platform-Independent Cooperative Human-Robot Interaction System: I. Perception
IEEE IROS 2010.
- Mallet, A., Pasteur, C., Herrb, M., Lemaignan, S., Ingrand, F.
GenoM3: Building middleware-independent robotic components
IEEE ICRA 2010.
- Mehani, O., Benenson, R., Lemaignan, S., Ernst, T.
Networking Needs and Solutions for Road Vehicles at Imara
ITST 2007.
- Stinckwich, S., Lemaignan, S., Saidani, S.
SqueakBot: a Pedagogical Robotic Platform
C5 Conference 2007.
- Lemaignan, S., Siadat, A., Dantan, J.Y., Semenenko, A.
MASON: A proposal for an ontology of manufacturing domain
IEEE Workshop on Distributed Intelligent Systems (DIS) 2006.

Book chapters

- Mondada, F., Fink, J., Lemaignan, S., Mansolino, D., Wille, F., Franinovi, K.
Ranger, an Example of Integration of Robotics into the Home Ecosystem
2015.

Selected Fellowships & Grants

- 2019–2022 **InnovateUK, CAV Forth – Verification for Connected Autonomous Vehicles**,
Co-Investigator, £600K.
- 2018–2019 **University of the West of England, Robots in Human Environment**,
Principal Investigator, £2.5K.
- 2015–2017 **EU H2020 Marie Skłodowska-Curie Individual Fellowship**,
Principal Investigator, € 195K.

Four additional bids under review

Supervision & Teaching Experience

Students supervision, Currently supervising 10+ PhD and MSc students, (click here for full list).

- o M. Bartlett (PhD, 2017-): *Data-Driven Social Robotics*
- o K. Winkle (PhD, 2016-): *Persuasive human-robot interactions*
- o C. Wallbridge (PhD, 2016-): *Spatial reasoning for Child-Robot Interaction*
- o E. Senft (PhD, 2015-2018): *Shared autonomy for social human-robot interactions*
- o A. Jacq (PhD, 2014-2015): *Mutual modeling and repair strategies in HRI*
- o A. Özgür (PhD, 2014-2015): *Cellulo: haptic robotics for learning*
- o S. Chandra (PhD, 2013-2017): *CoWriter project: learning by teaching handwriting to a robot*
- o J. Fink (PhD, 2011-2014): *Long-term acceptance of robots in daily life & anthropomorphism*

2018– **University of the West of England, senior lecturer.**

teaching at MSc level; Human-Robot Interaction, data science

2016–2018 **Plymouth University, lecturer.**

teaching at BSc & MSc level robotics, including HRI, ROS, Kalman filtering, localisation and planning, control architectures

2018–2016 **Guest lectures & Seminars, Plymouth University, EPFL, Université de Toulouse.**

ROS, simulation, ontologies, Python/C++ software engineering, computer graphics & 3D modelling.

2008–2011 **Teaching assistant, INSA Toulouse, Écoles des Mines de Paris.**

Prolog, Ontology Modeling, Java, ADA, SQL, Mechatronics.

Selected outreach activities

2019 **Scientific advisor for the WeTheCurious Bristol's science museum, City Lab project.**

2016– **UK & EU Robotics Weeks coordinator, University of Plymouth, University of the West of England.**

2011 **'Roboscopia' Human-Robot public theater performance, Science Day'11.**

<http://bit.ly/1LQpNWA>

2008–2011 **Toulouse's Cognitive Sciences Students Association, Co-chair.**

2008–2009 **South African SciFest festival, Science facilitator.**

1997–2012 **Executive Committee & Head of Educational Robotics, Planète Sciences, including coordination of the EU-ROBOT Robotic Competition .**

Technical Skills and Spoken Languages

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| Robotics | <ul style="list-style-type: none">o Expert in cognitive robotics and human-robot interactiono Expert in symbolic knowledge representationo Expert PR2, Pepper, Nao developero Contributor to ROS, OpenCVo Lead dev. MORSE simulator | Programming <ul style="list-style-type: none">o Python, modern C++, Prolog, SmallTalko Deep-learning frameworks: pytorch, TensorFlowo Open-source enthusiast |
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GitHub: github.com/severin-lemaignan

Languages

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| French | Native |
| English | Fluent |
| German | Advanced |