

Olivier Mangin, PhD

Social and developmental robotics researcher

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PROFILE

A thorough scientist and a creative problem solver, I am passionate about advancing robots' aptitude as our work partners and social peers. My solid scientific background with a specialisation in **machine learning** supported me along my 7+ **years of robotics research**, exploring questions from early **language acquisition** to how communication improves **collaborative manufacturing** between humans and robots. I am a resourceful engineer with extensive experience on programming from custom-made robots to commercial platforms and I particularly enjoy team-work to which I bring vision and method to embrace ambitious challenges.

EDUCATION

- 2010–2014 **Ph.D. in Robotics** — INRIA & Université de Bordeaux
The emergence of multimodal concepts: from perceptual motion primitives to grounded acoustic words
- 2009–2010 **M.Sc. in Applied mathematics** — École normale supérieure de Cachan
Master *Mathematics, vision, learning* (MVA), specialized in machine learning.
- 2006–2010 **Ingénieur polytechnicien (B.Sc. and M.Sc. equivalent)** — École polytechnique, Palaiseau
Specialized in computer science in France's leading school of engineering and science.

PROFESSIONAL EXPERIENCE

- 2015–Present **Postdoctoral associate** – Social robotics laboratory, Yale University
Cognitive robotics and collaborative manufacturing, with Professor Brian Scassellati.
- 2014 **Postdoctoral associate** — Flowers team, INRIA
Multimodal learning, language acquisition, sensori-motor development
- 2010–2014 **Ph.D. student in Robotics** — Flowers team, INRIA
Developmental robotics, under the supervision of Dr. Pierre-Yves Oudeyer.
- 2010 **Research fellow** — Institut des systèmes intelligents et de robotique, UPMC (Paris VI)
Motor control with modern reinforcement learning, with Professor Olivier Sigaud.
- 2009 **Research fellow** — Flowers team, INRIA Bordeaux Sud-Ouest
Bag-of-words method to discover and learn sound invariants from speech.

TECHNICAL AND SCIENTIFIC SKILLS

Research	Human robot collaboration, language acquisition, learning from demonstration, behavior understanding
Machine learning	General machine learning, (inverse) reinforcement learning, matrix factorization, partially observable Markov decision processes
Programming	Python (and scientific tools), C , Java , Matlab , Ruby , Haskell LaTeX , Git , unit testing, continuous integration, web technologies— D3.js , Jekyll , Django , Ruby on Rails
Robots	Robot operating system (ROS), 2+ years experience on the Baxter research robot, 3 years using Dynamixel servo actuators
Systems	Advanced Unix mastering (15+ years of daily Linux use, system administration including web servers)

SOCIAL AND MANAGEMENT SKILLS

Languages	Native French , full professional proficiency in English , intermediate German
Management	Mentoring of students and interns in research context (2014–2017), leading several student associations and organization of many events and travels including 10–1000 people (2007–2009), team management in small projects and during military exercises as an officer in the French paratroopers (2006)
Communication	Proven track record of scientific publications, presented my work in several world-class conferences, including to audiences outside of my field and the general public
Temper	Good ability to work under pressure; experience in mentally and physically demanding activities: 4+ years of caving, team member in sailing races, commando and military parachute training; strong team spirit

ACHIEVEMENTS

- 2014 Best thesis poster award — Bordeaux doctoral school of mathematics and computer science
- 2011 Exhibition *Mathematics, a beautiful elsewhere*, Fondation Cartier (Paris)
Active member of the conception, development, and maintenance team of the Ergo-Robots platform that was presented during the two months art exhibition.
- 2008 ACM ICPC regional contest

LIST OF PUBLICATIONS

- [1] A. Roncone, O. Mangin, and B. Scassellati. “Transparent Role Assignment and Task Allocation in Human Robot Collaboration”. In: *Robotics and Automation (ICRA), IEEE International Conference on* (2017).
- [2] O. Mangin et al. “MCA-NMF: Multimodal Concept Acquisition with Non-Negative Matrix Factorization”. In: *PLoS ONE* 10.10 (2015), e0140732.
- [3] O. Mangin. “The Emergence of Multimodal Concepts: From Perceptual Motion Primitives to Grounded Acoustic Words”. PhD thesis. Université de Bordeaux, 2014.
- [4] O. Mangin and P.-Y. Oudeyer. “Feature learning for multi-task inverse reinforcement learning”. 2013.
- [5] O. Mangin and P.-Y. Oudeyer. “Learning Semantic Components from Subsymbolic Multimodal Perception”. In: *the Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics (ICDL-EpiRob)*. 3. 2013.
- [6] O. Mangin and P.-Y. Oudeyer. “Learning the combinatorial structure of demonstrated behaviors with inverse feedback control”. In: *International Workshop on Human Behavior Understanding*. 3. Vilamoura, Algarve (Portugal), 2012.
- [7] O. Mangin and P.-Y. Oudeyer. “Learning to recognize parallel combinations of human motion primitives with linguistic descriptions using non-negative matrix factorization”. In: *International Conference on Intelligent Robots and Systems (IROS 2012)*. Vilamoura, Algarve (Portugal): IEEE/RSJ, 2012.
- [8] O. Mangin, D. Filliat, and P.-Y. Oudeyer. “A bag-of-features framework for incremental learning of speech invariants in unsegmented audio streams”. In: *Tenth International Conference on Epigenetic Robotics*. Ed. by B. Johansson, E. Sahin, and C. Balkenius. Öorenåas Slott, Sweden, 2010, pp. 73–80.

TEACHING

- Fall 2016 **Teaching assistant** — Computer Science, *Intelligent robotics*
Yale University
- Spring 2014 **Teacher** — Computer Science, *System programming*
Université de Bordeaux—Pôle universitaire français, Ho Chi Minh City, Vietnam
- Spring 2013 **Teaching assistant** — Mathematics, *Cryptography*
Université de Bordeaux

- Spring 2013 **Teacher** — Computer Science, *Introduction to robotics*
Université de Bordeaux
- Fall 2012 **Teacher** — Computer Science, *System programming*
Université de Bordeaux—Pôle universitaire français, Ho Chi Minh City, Vietnam
- Spring 2012 **Teaching assistant** — Mathematics, *Cryptography*
Université de Bordeaux
- Spring 2012 **Teaching assistant** — Mathematics, *Statistics I*
Université de Bordeaux
- Spring 2011 **Teaching assistant** — Mathematics, *Analysis I*
Université de Bordeaux
- Spring 2011 **Teaching assistant** — Mathematics, *Elementary cryptography*
Université de Bordeaux

OUTSIDE INTERESTS

- Sport Various sailing competition in 2007–2012, sailing instructor experience (French A2C1 level)
Climbing, caving, bike, hiking, running (*Paris Marathon 2008*)
- 2007–2009 Leading several student organizations (school traditions, ski and caving, cocktails, movie projections).