

CLÉMENT MOULIN-FRIER, PHD

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33000 Bordeaux, France

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39 year old

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Last update: September 2, 2020

CURRENT POSITION

Since October 2019

PERMANENT RESEARCHER (CRCN)

Inria, Bordeaux, FLOWERS research group, France

Research: *From ecological constraints to the emergence of language: Grounding Artificial Intelligence in the origins of human behavior*

Website: <https://flowers.inria.fr>

Funding:

- Inria Exploratory Action ORIGINS (2020-2022): *Grounding AI in the Origins of Human Behavior*
- Inria Cordi Grant *Behavior* (2020-2022): *Emergent Communication through Curiosity-driven Multi-Agent Reinforcement Learning*

PREVIOUS POSITIONS

October 2017 – July 2019

RESEARCH SCIENTIST

Cogitai, Inc. (Now Sony-AI America), Orange County, USA

Research: Cogitai, Inc. is dedicated to building artificial intelligences (AIs) that learn continually from interaction with the real world. Our goal is to build the brains, i.e., the continual-learning AI software, that will let everyday things that sense and act get smarter with experience. This experience will be shared across devices and domains to allow the rapid scaling-up of learning.

Executives: Peter Stone, Satinder Singh, Mark Ring

Website: <https://www.cogitai.com>

January 2015 – October 2017

POST-DOCTORAL RESEARCHER

SPECS research group, Universitat Pompeu Fabra, Barcelona, Spain

Research: *Adaptive cognitive architectures for robotics and the emergence of social behaviors*

Supervision: Paul Verschure

Funding:

- *What You Say Is What You Did*, WYSIWYD project (FP7 ICT 612139)
- *Socialising Sensori-Motor Contingencies*, socSMC project (641321-H2020FETPROACT-2014).
- *Role of Consciousness in Adaptive Behavior* ERC's CDAC project (ERC-2013ADG 341196)

January 2012 – November 2014

RESEARCHER

FLOWERS research group, Inria, Bordeaux, France.

Research: *Curiosity-driven learning applied to robotics and emergent communication*

Supervision: Pierre-Yves Oudeyer

Funding: ERC Starting Grant EXPLORERS 240 007, then Inria institute

September 2011 – December 2011

POST-DOCTORAL RESEARCHER

LPPA (Physiology of Perception and Action), Collège de France CNRS, Paris, France.

Research: *Bayesian models of decision making for bipedal walking control*

Supervision: Jacques Droulez

Funding: French government

January 2009 – July 2009

VISITING SCHOLAR

University of Southern California, Los Angeles, USA.

Research: *Recognizing speech in a novel accent: The motor theory of speech perception reframed*

Supervision: Michael A. Arbib

Funding: Explora-Doc French scholarship

ACADEMIC EDUCATION

September 2007 – June 2011

PHD STUDENT

Gipsa-Lab, Speech and Cognition department, Grenoble University

Research: *Emergence of communication systems in Bayesian vocal agent populations*

Supervision: Jean-Luc Schwartz, Pierre Bessière, and Julien Diard

Research stay: 6 months with M.A. Arbib at University of Southern California, Los Angeles, USA.

Funding: French ministry research scholarship

September 2006 – July 2007

MASTER DEGREE IN COGNITIVE SCIENCE

Grenoble Institute of Technology, France

With honors

Grenoble Institute of Technology

September 2005 – July 2006

MASTER DEGREE IN COMPUTER SCIENCE

With honors

University Joseph Fourier, Grenoble, France

SCIENTIFIC RESPONSIBILITIES

2019 – 2020

CO-EDITION OF THE FRONTIERS RESEARCH TOPIC “EMERGENT BEHAVIOR IN ANIMAL-INSPIRED ROBOTICS”

<https://www.frontiersin.org/research-topics/13627/emergent-behavior-in-animal-inspired-robotics>

2020

CO-ORGANIZER OF THE SMILES WORKSHOP

International Conference on Development and Learning, ICDL (virtual conference)

<https://cdstc.gitlab.io/icdl-2020/program/workshops/>

2015

PROGRAM CHAIR

International Conference on Development and Learning, ICDL/Epirob, Providence, RI, USA

www.icdl-epirob.org

2015-present

ASSOCIATE EDITOR

International Conference on Development and Learning, ICDL/Epirob

www.icdl-epirob.org

2015-present

CHAIR OF THE LANGUAGE AND COGNITION TASK FORCE

IEEE Technical Committee on Cognitive and Developmental Systems

<https://sites.google.com/view/ieeetflanguageandcognition/home>

2014 – 2015

CO-EDITOR OF THE SPECIAL ISSUE “ON THE COGNITIVE NATURE OF SPEECH SOUND SYSTEMS”

Journal of Phonetics

First author of the target article, see *Publications*

2015

MEMBER OF THE PROGRAM COMMITTEE

Workshop “Sensorimotor Contingencies for Robotics” at IROS 2015, Hamburg, Germany

<http://www.iri.upc.edu/groups/perception/sensorimotorIROS15/>

AWARDS, HONORS, GRANTS AND COMPETITIONS

2020 – 2022

INRIA EXPLORATORY ACTION

ORIGINS: *Grounding AI in the Origins of Human Behavior*

Funding of a 2-year post-doc position

2020 – 2022

INRIA CORDI GRANT

Emergent Communication through Curiosity-driven Multi-Agent Reinforcement Learning
Funding of a 3-year PhD position

2017 – 2020

PLAN NACIONAL (SPANISH RESEARCH GRANT)

INSOCO project (DPI2016-80116-P)

Social interactions based on sensorimotor contingencies

In collaboration with Marti Sanchez-Fibla.

<http://specs.upf.edu/projects/3159>

November 2012

BEST PAPER AWARD

International Conference on Development and Learning, ICDL/Epirob, San Diego, USA.

Category: Computational models of development

Paper: Curiosity-driven phonetic learning, see *Publications*

2012

QUALIFICATION AS ASSOCIATE PROFESSOR (RENEWED IN 2018)

French ministry of research.

Domain: Computer Science

2009

BEST TEACHING PROJECT

Grenoble CIES (French center for university-level teaching)

2008

EXPLORA-DOC SCHOLARSHIP

French Rhone-Alpes region

Funding for a 6-months visit at the University of Southern California, Los Angeles, USA

2006

MASTER DEGREE FELLOWSHIP

French government

INVITED TALKS

November 2019

“SELF-ORGANIZATION OF COMMUNICATION SYSTEMS IN LEARNING AGENTS”

Neurorobotics workshop @ ENSEIRB, Bordeaux, France

Invitation from Xavier Hinaut (Inria)

October 2019

“ACTIVE LEARNING AND CURIOSITY IN ROBOTICS”

French national days of robotics research (JNRR), Vittel, France

Invitation from David Filliat (ENSTA Paristech)

June 2017

“COGNITION, EMBODIMENT AND SELF-ORGANIZATION: AN INTEGRATED VIEW TO ARTIFICIAL INTELLIGENCE”

Machine Learning group at Universitat Pompeu Fabra

Invitation from Hector Geffner, head of the group

March 2017

“COGNITIVE ARCHITECTURES FOR SOCIAL ROBOTICS”

European Robotics Forum, Edinburgh, Scotland

Empathic Human-Robot Interaction Workshop

Invitation from Kerstin Dautenhahn, organizer of the workshop

August 2015

“EVOLUTION AND DEVELOPMENT OF VOCAL COMMUNICATION STRUCTURES”

Princeton University, Developmental Neuromechanics & Communication Lab, USA

Invitation from Asif Ghazanfar, head of the group

November 2014

“EXPLORATION STRATEGIES IN DEVELOPMENTAL ROBOTICS”

Humanoids conference, Madrid, Spain. Workshop

Workshop “Active Learning in Robotics: Exploration Strategies in Complex Environments”

Organisers: Johannes Kulick, Herke van Hoof, Marc Toussaint, and Jan Peters

October 2014

“POPPY: A ROBOTIC PLATFORM FOR CODERS, MAKERS, ARTISTS AND RESEARCHERS”

Pycon conference, Lyon, France

Invitation by Françoise Conil, co-organizer of the conference

August 2013

“EXPLORATION STRATEGIES IN DEVELOPMENTAL ROBOTICS”

Honda Research Institute, Tokyo, Japan

Invitation by Angelica Lim, visiting scholar and now researcher at Softbank Robotics

TEACHING ACTIVITIES

2020

IA2 / ROBOTICS COURSE (12 HOURS)

Centre de Recherche Interdisciplinaire (CRI, Paris)

Master AIRE: Interdisciplinary Approaches in Research and Education

2015-2020

RESPONSIBLE PROFESSOR (77.5 HOURS)

Universitat Pompeu Fabra, Barcelona, Spain

Course “Real-time Interaction in Cognitive and Social Systems” (2015-2017) and “System Design, Integration and Control” (2017-2020)

Cognitive Systems and Interactive Media (CSIM) Master

2010--2011

TEACHING ASSISTANT IN COMPUTER SCIENCE (92 HOURS)

UFR IMAG, University Joseph Fourier, Grenoble, France

Computer Science and Applied Mathematics
Bachelor and Master degrees

2007--2010

TEACHING ASSISTANT IN COMPUTER SCIENCE (192 HOURS)

Université Stendhal, Grenoble, France

3 years of teacher training

STUDENT SUPERVISION

2019 – 2020

PHD THESIS CO-SUPERVISION

Flowers group, Inria, France

Student: Tristan Karch

Grounded language learning and curiosity-driven exploration with deep reinforcement learning

2019 – 2020

MASTER PROJECT SUPERVISION

Flowers group, Inria, France

Student: Valentin Villecroze, École Polytechnique, Paris, France

Emergence of communication systems as a way to maintain cooperative networks in multi-agent simulations

2014 – 2015

MASTER PROJECT SUPERVISION

Flowers group, Inria, France

Student: Younès Rabii, Ecole Normale Supérieure de Cognitique, Bordeaux, France

Simulation environment and ecologically valid interaction scenarios for multi-agent reinforcement learning

2015-2017

PHD THESIS CO-SUPERVISION

SPECS group, Universitat Pompeu Fabra, Spain

Student: Jordi-Ysard Puigbo

Value modulation in cortical visual processing and application to robotic control

2016 – 2017

MASTER PROJECT SUPERVISION

SPECS group, Universitat Pompeu Fabra, Spain

Student: Ismael Tito Freire González, CSIM Master, UPF, Spain

Modeling the formation of social conventions in agent populations

2015 – 2016

MASTER PROJECT SUPERVISION

SPECS group, Universitat Pompeu Fabra, Spain

Student: Yasin Can Akmehmet, CSIM Master, UPF, Spain

Autonomous development of turn-taking behaviors in robot populations

2014 – 2015

MASTER PROJECT, THEN PHD THESIS CO-SUPERVISION

Flowers group, Inria, France

Student: Sébastien Forestier, Ecole Normale Supérieure, Paris, France

Active learning strategies for the modelling of infant vocal development

2014 – 2013

MASTER PROJECT SUPERVISION

Flowers group, Inria, France

Student: Marie-Morgane Paumard, Ecole Normale Supérieure de Cachan, France

Learning the manipulation of flexible tools in developmental robotics: a fishing robot

2013 – 2014

MASTER PROJECT SUPERVISION

Flowers group, Inria, France

Student: Jules Brochard, Ecole Normale Supérieure de Cachan, France

Emergent maturations in early vocal development. Journal article, see Publications

2010 – 2011

MASTER PROJECT SUPERVISION

GIPSA-Lab, Grenoble Institute of Technology, France

Student: Raphaël Laurent, Master MoSIG, ENSIMAG, Grenoble, France

A computational model to study quantitatively motor, sensory, and sensorimotor model responses in Speech Recognition. 3 co-authored publications, including a journal paper

PUBLICATIONS

PREPRINTS

Colas, C., Karch, T., Lair, N., Moulin-Frier, C., Dussoux, J.-M., Dominey, P. F., & Oudeyer, P.-Y. (2020). Language as a Cognitive Tool to Imagine Goals in Curiosity Driven Exploration. arXiv preprint arXiv:2002.09253 *Under review*.

Etcheverry, M., Moulin-Frier, C., & Oudeyer, P. Y. (2020). Hierarchically-Organized Latent Modules for Exploratory Search in Morphogenetic Systems. arXiv preprint arXiv:2007.01195 *Under review*.

Sanchez-Fibla, M., Demirel; B., Moulin-Frier, C., Arsiwalla, X.D., Verschure, P.F.M.J (2020). Characterizing self, agency, similar others and autonomy from sensorimotor interactions. arXiv preprint arXiv:1711.08333 *Under review*.

Arsiwalla, X.D., Moulin-Frier, C., Herreros, I., Sanchez-Fibla, M., Verschure, P.F.M.J (2017). The Morphospace of Consciousness. *arXiv preprint arXiv:1705.11190*

JOURNAL ARTICLES

Freire, I. T., Moulin-Frier, C., Sanchez-Fibla, M., Arsiwalla, X. D., & Verschure, P. F. M. J. (2020). Modeling the formation of social conventions from embodied real-time interactions. *PLOS ONE*, 15(6), e0234434. <https://doi.org/10.1371/journal.pone.0234434>

Sanchez-Fibla, M., Forestier, S., Moulin-Frier, C., Puigbo, J.-Y. and Verschure, P. F. (2019) “From motor to visually guided bimanual affordance learning,” *Adaptive Behavior*. <https://doi.org/10.1177/1059712319855836>

Moulin-Frier, C., Fischer, T., Petit, M. Poiteau, G., Puigbo, J.-Y., Pattacini, U., Low, S.C., Camilleri, D., Nguyen, P. Hoffmann, M. Chang, H.J., Zambelli, M., Mealier, A.-L., Damianou, A., Metta, G. Prescott, T., Demiris, Y., Dominey, P.-F. and Verschure, P. (2018). DAC-h3: A Proactive Robot Cognitive Architecture to Acquire and Express Knowledge About the World and the Self. *IEEE Transactions on Cognitive and Developmental Systems*. 10(4): 1005 – 1022.

Fischer, T., Puigbò, J.-Y., Camilleri, D., Nguyen, P. D. H., Moulin-Frier, C., Lallée, S., Metta, G., Prescott, T. J., Demiris, Y., & Verschure, P. F. M. J. (2018). ICub-HRI: A Software Framework for Complex Human–Robot Interaction Scenarios on the iCub Humanoid Robot. *Frontiers in Robotics and AI*, 5, 22. <https://doi.org/10.3389/frobt.2018.00022>

Moulin-Frier, C., Brochard, J., Stulp, F., & Oudeyer, P.-Y. (2017). Emergent Jaw Predominance in Vocal Development through Stochastic Optimization. *IEEE Transactions on Cognitive and Developmental Systems*. Early access: <https://ieeexplore.ieee.org/document/7955101>

Acevedo Valle, J. M., Angulo, C., & Moulin-Frier, C. (2017). Autonomous Discovery of Motor Constraints in an Intrinsically-Motivated Vocal Learner. *IEEE Transactions on Cognitive and Developmental Systems*. 10(2): 314 – 325.

Moulin-Frier, C., Diard, J., Schwartz, J.-L., and Bessière, P. (2015). COSMO (“Communicating about Objects using Sensory-Motor Operations”): a Bayesian modeling framework for studying speech communication and the emergence of phonological systems. *Journal of Phonetics*. 53: 5–41 **Target paper of a special issue.**

Moulin-Frier, C., Nguyen, S. M., and Oudeyer, P.-Y. (2013). Self-organization of early vocal development in infants and machines: The role of intrinsic motivation. *Frontiers in Psychology (Cognitive Science)*, 4(1006).

Moulin-Frier, C. and Arbib, M. A. (2013). Recognizing speech in a novel accent: The motor theory of speech perception reframed. *Biological Cybernetics*, 107 (4):421–447.

N’Guyen, S., Moulin-Frier, C., and Droulez, J. (2013). Decision Making under Uncertainty: A Quasimetric Approach. *PLoS ONE*, 8(12).

Moulin-Frier, C., Laurent, R., Bessière, P., Schwartz, J.-L., and Diard, J. (2012). Adverse conditions improve distinguishability of auditory, motor and perceptuo-motor theories of speech perception: an exploratory Bayesian modeling study. *Language and Cognitive Processes*. 27(7-8): 1240–1263. Special Issue: Speech Recognition in Adverse Conditions.

INVITED COMMENTARIES IN INTERNATIONAL JOURNALS

Moulin-Frier, C., & Verschure, P. (2016). Two possible driving forces supporting the evolution of animal communication: Comment on “Towards a Computational Comparative Neuroprimatology: Framing the language-ready brain” by Michael A. Arbib. *Physics Of Life Reviews*, 16, 88–90.

Schwartz, J.-L., Barnaud, M.-L., Bessière, P., Diard, J., & Moulin-Frier, C. (2016). Phonology in the mirror: Comment on “Towards a Computational Comparative Neuroprimatology: Framing the language-ready brain” by Michael A. Arbib . *Physics Of Life Reviews*, 16, 93–95.

Laurent, R., Moulin-Frier, C., Bessière, P., Schwartz, J.-L., & Diard, J. (2013). Integrate yes, but what and how? A computational approach of sensorimotor fusion in speech. Commentary In *Behavioral and Brain Sciences*, 36(4):36–37.

BOOK CHAPTER

Moulin-Frier, C., Schwartz, J., Diard, J., and Bessière, P. (2011b). Emergence of articulatory-acoustic systems from deictic interaction games in a “Vocalize to Localize” framework. Chapter in Primate communication and human language: Vocalisations, gestures, imitation and deixis in humans and non-humans. *Advances in Interaction Studies*’ series by John Benjamins Pub. Co.

INTERNATIONAL CONFERENCES – FULL PAPERS

Karch, T., Colas, C., Teodorescu, L., Moulin-Frier, C., & Oudeyer, P.-Y. (2020). Deep Sets for Generalization in RL. *Beyond “Tabula Rasa” in Reinforcement Learning (BeTR-RL) Workshop*. International Conference on Learning Representations (ICLR 2020). <http://arxiv.org/abs/2003.09443>

Moulin-Frier, C., Puigbò, J. Y., Arsiwalla, X. D., Sanchez-Fibla, M., & Verschure, P. F. (2017). Embodied Artificial Intelligence through Distributed Adaptive Control: An Integrated Framework. *International Conference on Development and Learning, ICDL/Epirob, Lisbon, Portugal*.

Arsiwalla, X.D., Herreros, I., Moulin-Frier, C., Verschure, P.F.M.J (2017). Consciousness as an Evolutionary Game-Theoretic Strategy. In *Conference on Biomimetic and Biohybrid Systems*, 509-514

Sanchez-Fibla, M., Moulin-Frier, C., Arsiwalla, X. and Verschure, P. (2017) Social Sensorimotor Contingencies: Towards Theory of Mind in Synthetic Agents, in *Recent Advances in Artificial Intelligence Research and Development: Proceedings of the 20th International Conference of the Catalan Association for Artificial Intelligence*, vol. 300, p. 251.

Sanchez-Fibla, M., Moulin-Frier, C. and Verschure, P. (2017) A sensorimotor account of visual and tactile integration for depth perception: An iCub robot experiment. *International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)*, 2017, pp. 86–91.

Moulin-Frier, C., Arsiwalla, X. D., Puigbò, J.-Y., Sánchez-Fibla, M., Duff, A., and Verschure, P. F. M. J. (2016). Top-Down and Bottom-Up Interactions between Low-Level Reactive Control and Symbolic Rule Learning in Embodied Agents. In *Proceedings of the Workshop on Cognitive Computation: Integrating neural and symbolic approaches. 30th Annual Conference on Neural Information Processing Systems (NIPS 2016)*.

Puigbò, J.-Y., Moulin-Frier, C., and Verschure, P. F. M. J. (2016). Towards Self-controlled Robots Through Distributed Adaptive Control. In *Conference on Biomimetic and Biohybrid Systems* (pp. 490–497). Springer.

Arsiwalla, X. D., Herreros-Alonso, I., Moulin-Frier, C., Sánchez-Fibla, M., and Verschure, P. F. M. J. (2016). Is Consciousness a Control Process? In *Proceedings of the 19th International Conference of the Catalan Association for Artificial Intelligence*.

Acevedo Valle, J. M., Angulo Bahón, C., Moulin-Frier, C., Trejo Ramírez, K. A. (2016). The role of somatosensory models in vocal autonomous exploration. In *Revista Internacional de Investigación e Innovación Tecnológica* 4 (23), 1-11

Moulin-Frier, C., Sanchez-Fibla, M., and Verschure, P. F.M.J (2015b). Autonomous development of turn-taking behaviors in agent populations: a computational study. In *International Conference on Development and Learning, ICDL/Epirob, Providence (RI), USA*.

Puigbò, J.-Y., Moulin-Frier, C., Vouloutsis, V., Sanchez-Fibla, M., Herreros, I., and Verschure, P. F. M. J. (2015). Skill refinement through cerebellar learning and human haptic feedback: an iCub learning to paint experiment. In *IEEE-RAS Conference on Humanoids Robots (Humanoids 2015)*, Seoul, Korea.

Puigbò, J.-Y., Herreros, I., Moulin-Frier, C., and Verschure, P. F. M. J. (2015). Towards a two-phase model of sensor and motor learning. In *Conference on Biomimetic and Biohybrid Systems* (pp. 453–460). Springer.

Acevedo Valle, J. M., Angulo, C., Agell, N., and Moulin-Frier, C. (2015). Proprioceptive Feedback and Intrinsic Motivations in Early-Vocal Development. In *Proceedings of the 18th International Conference of the Catalan Association for Artificial Intelligence*. Armengol, E., Boixader, D., Grimaldo, F.

Moulin-Frier, C. and Oudeyer, P.-Y. (2013a). Exploration strategies in developmental robotics: A unified probabilistic framework. In *International Conference on Development and Learning, ICDL/Epirob, Osaka, Japan*.

Moulin-Frier, C. and Oudeyer, P.-Y. (2013b). Learning how to reach various goals by autonomous interaction with the environment: unification and comparison of exploration strategies. In *1st Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM2013), Princeton University, New Jersey*.

Moulin-Frier, C. and Oudeyer, P.-Y. (2013c). The role of intrinsic motivations in learning sensorimotor vocal mappings: a developmental robotics study. In *Proceedings of Interspeech, Lyon, France, Lyon, France*.

Moulin-Frier, C. and Oudeyer, P.-Y. (2012). Curiosity-driven phonetic learning. In *International Conference on Development and Learning, Epirob, San Diego, USA*. **Best paper award.**

Moulin-Frier, C., Laurent, R., Bessière, P., Schwartz, J., and Diard, J. (2011a). Noise and inter-speaker variability improve distinguishability of auditory, motor and perceptuo-motor theories of speech perception : An exploratory bayesian modeling study. In *9th International Seminar on Speech Production, ISSP'11, Montreal, Canada*.

Moulin-Frier, C., Schwartz, J., Diard, J., and Bessière, P. (2010). A unified theoretical bayesian model of speech communication. In *1st conference on Applied Digital Human Modeling, Miami, USA*.

Moulin-Frier, C., Schwartz, J., Diard, J., and Bessière, P. (2008c). Emergence of a language through deictic games within a society of sensori-motor agents in interaction. In *International Workshop on "Speech and Face to Face Communication"*, Grenoble France.

Moulin-Frier, C., Schwartz, J., Diard, J., and Bessière, P. (2008b). Emergence of a language through deictic games within a society of sensori-motor agents in interaction. In *8th International Seminar on Speech Production, ISSP'08, Strasbourg, France*.

Moulin-Frier, C., Schwartz, J., Diard, J., and Bessière, P. (2008a). Emergence du langage par jeux déictiques dans une société d'agents sensori-moteurs en interaction. In *27e Journées d'Etudes sur la Parole, JEP'2008, Avignon France*.

INTERNATIONAL CONFERENCES – SHORT PAPERS

Moulin-Frier, C., & Oudeyer, P.-Y. (2020). Multi-Agent Reinforcement Learning as a Computational Tool for Language Evolution Research: Historical Context and Future Challenges. *Challenges and Opportunities for Multi-Agent Reinforcement Learning (COMARL), AAAI Spring Symposium Series, Stanford University, Palo Alto, California, USA*.

Puigbò, J.-Y., Vouloutsi, V., Moulin-Frier, C., & Verschure, P. F. M. J. (2015). Reactive and adaptive control loops for social learning in human--robot interaction. Workshop "Mechanisms of learning in social contexts", *IEEE International Conference on Development and Learning, ICDL/Epirob, Providence (RI), USA*.

Moulin-Frier, C., Rouanet, P., and Oudeyer, P.-Y. (2014). Explauto: an open-source Python library to study autonomous exploration in developmental robotics. In *International Conference on Development and Learning, ICDL/Epirob, Genova, Italy*.

Arbib, M. A. and Moulin-Frier, C. (2010). Recognizing speech in a novel accent: The motor theory of speech perception reframed. In *Neurobiology of Language Conference, San Diego, USA*.

Schwartz, J., Rochet-Capellan, A., and Moulin-Frier, C. (2007). Speech at reach of hand and mouth: Theoretical arguments, experimental facts and computational advances. In *Workshop “Vocoid – Vocalization, COmmunication, Imitation and Deixis in adult and infant human and non human primates”*, Grenoble France.

THESES

Moulin-Frier, C. (2011). Rôle des relations perception-action dans la communication parlée et l'émergence des systèmes phonologiques : étude, modélisation computationnelle et simulations. PhD thesis, Université de Grenoble.

Moulin-Frier, C. (2007). Jeux déictiques dans une société d'agents sensori-moteurs en interaction. Master's thesis, Grenoble-INP.

Moulin-Frier, C. (2006). Objets communicants : la traçabilité. Master's thesis, Université Joseph Fourier, Grenoble.

OUTREACH ACTIVITIES & INNOVATION

September 2017

CO-ORGANIZER OF THE RE-FLUX PERFORMANCE

Barcelona Cognition Brain and Technology summer school (BCBT 2016)

Multimodal Performance with AI, Robots, VR and Humans

<http://bcbt.upf.edu/bcbt16/node/330>

June 2015

CO-ORGANIZER OF A ROBOTIC ARTISTIC PERFORMANCE

Music Hack Day @ Sonar Festival, Barcelona

Audio synthesis using robotic bodies

<http://new.musichackday.org/>

2013 – 2017

INITIATOR AND MAIN CONTRIBUTOR OF THE OPEN-SOURCE *EXPLAUTO* LIBRARY

A library to study, model and simulate intrinsically motivated multitask learning and exploration in virtual and robotic agents

<https://github.com/flowersteam/explauto>

October 2014

ORGANISATION OF A 3-DAY HACKATHON

Universciences, Paris, France

Conception and programming of the Poppy robot. 25 participants

Video of the event: <https://vimeo.com/109145300>

September 2014

INTERVIEW FOR THE FRENCH JOURNAL BIOFUTUR

On robotic approaches to language evolution modelling

2013 – 2015

MEMBER OF THE POPPY-PROJECT

Open-source robotics for teacher, makers, artists and researchers

Realisation of a various robotic demonstrations, workshops and dissemination events

<https://www.poppy-project.org>

LANGUAGES

English (C1), French (native), Spanish (B1)

RECOMMENDATIONS

PETER STONE

Professor at *The University of Texas at Austin*.

COO of *Cogitai Inc.* where I worked as a Research Scientist (2017-2019)

Specialized in reinforcement learning

pstone@cs.utexas.edu

PIERRE-YVES OUDEYER

INRIA Research Director, Head of the Flowers research group, Bordeaux, France

PhD thesis reviewer and post-doc advisor (2012-2014)

Specialized in developmental robotics.

pierre-yves.oudeyer@inria.fr

PIERRE BESSIERE

CNRS Research Director, Sorbonne Universités – UPMC -ISIR, Paris, France

PhD thesis advisor

Specialized in computer and cognitive sciences

pierre.bessiere@isir.upmc.fr

YIANNIS DEMIRIS

Head of the Personal Robotics Laboratory, Imperial College, London, UK

Collaborator in the WYSIWYD European project (2015-2017)

Specialized in human-robot interaction and machine learning

y.demiris@imperial.ac.uk

PAUL VERSCHURE

Head of the SPECS research group, Universitat Pompeu Fabra, Barcelona, Spain

Post-doc advisor (2015-present)

Specialized in computational neuroscience, psychology and robotics

paul.verschure@upf.edu

MICHAEL A. ARBIB

Professor, USC Brain Project, University of Southern California, Los Angeles, USA
Collaborator and PhD thesis reviewer
Specialized in computational neuroscience and language evolution
arbib@usc.edu

MATTHIEU LAPEYRE

CEO and co-founder of Pollen Robotics, Bordeaux, France. <http://pollen-robotics.com/en>
Designer of the *Poppy* humanoid robot for which I have realized a number of applications
Specialized in open-source robotics
matthieu.lapeyre@pollen-robotics.com

JEAN-LUC SCHWARTZ

CNRS Research Director, GIPSA-Lab, Speech and Cognition Dpt, Grenoble, France
PhD thesis advisor
Specialized in speech science
jean-luc.schwartz@gipsa-lab.grenoble-inp.fr

JACQUES DROULEZ

CNRS Research Director, Sorbonne Universités – UPMC -ISIR, Paris, France
Post-doc advisor
Specialized in computer and cognitive sciences
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