

PERSONAL INFORMATION

Family name, First name: Caligiore, Daniele

Date of birth: 27/07/1976

URL for web site: <http://www.istc.cnr.it/it/people/daniele-caligiore>

EDUCATION

2011 (April 13th): PhD in Biomedical Engineering, University Campus Bio-Medico, Italy (Tutor: Prof. E. Guglielmelli)

2003 (July): Habilitation to practice as an engineer, Faculty of Engineering, University of Catania, Italy

2003 (January): Master Degree in Electronics Engineering (Robotics), Faculty of Engineering, University of Catania, Italy

CURRENT POSITION

Researcher

Institution: Institute of Cognitive Sciences and Technologies, National Research Council, Italy

PREVIOUS POSITIONS

2011-2014 Research fellow

Institution: Institute of Cognitive Sciences and Technologies, National Research Council, Italy

January 2010-June 2010: Visiting Researcher

Institution: Centre for Robotics and Neural Systems and School of Psychology, University of Plymouth, UK

2008-2010: PhD Student

Institution: University Campus Bio-Medico, Italy

2007-2011: Researcher

Institution: Department of Psychology, University of Bologna, Italy

2006-2009: Research assistant

Institution: Institute of Cognitive Sciences and Technologies, National Research Council, Italy

2005-2006: Research assistant volunteer

Institution: Computing and Modelling Unit, ENEA Research Centre, Italy

2004-2005: Research assistant volunteer

Institution: Institute of Cognitive Sciences and Technologies, National Research Council, Italy

FELLOWSHIPS AND AWARDS

24 months post-doc research grant (May 2012-May 2014):

Topic: Development of embodied and bio-constrained computational models of learning based on intrinsic and extrinsic motivations

Institution: Institute of Cognitive Sciences and Technologies, National Research Council, Italy

Funds: EU project IM-CLeVeR - Intrinsically Motivated Cumulative Learning Versatile Robots

14 months post-doc research grant (March 2011-May 2012):

Topic: Development of embodied and bio-constrained computational models of learning based on intrinsic and extrinsic motivations

Institution: Institute of Cognitive Sciences and Technologies, National Research Council, Italy

Funds: EU project IM-CLeVeR - Intrinsically Motivated Cumulative Learning Versatile Robots

36 months research grant (March 2008-March 2011):

Topic: Development of computational models to reproduce by computer simulations cognitive neuroscience experiments

Institution: Department of Psychology, University of Bologna, Italy

Funds: EU project ROSSI - Emergence of communication in Robots through Sensorimotor and Social Interaction

6 months visiting researcher grant (January 2010-June 2010):

Topic: Development of computational models to study affordances processing in Parkinson's

Institution: School of Psychology and Centre for Robotics and Neural Systems, University of Plymouth, UK

Funds: EU project ITALK - Integration and Transfer of Action and Language Knowledge in Robots and UK project VALUE - Vision, Action, and Language Unified by Embodiment

8 months research grant (December 2008-August 2009):

Topic: Development of computational models to reproduce cognitive neuroscience experiments in humans and non-human primates, analyzing neural activity and movement time

Institution: Institute of Cognitive Sciences and Technologies, National Research Council, Italy

Funds: EU project IM-CLeVeR - Intrinsically Motivated Cumulative Learning Versatile Robots

4 months research grant (November 2007-March 2008):

Topic: Programming of kinematic experiments and development of computational model to study grasping behaviours

Institution: Department of Psychology, University of Bologna, Italy

Funds: Department of Psychology, University of Bologna, Italy

13 months research grant (September 2006-October 2007):

Topic: Development of computational model to study reaching/grasping behaviours in humans

Institution: Institute of Cognitive Sciences and Technologies, National Research Council, Italy

Funds: EU project MindRaces: from Reactive to Anticipatory Cognitive Embodied Systems

10 months research grant (October 2005-August 2006):

Topic: Development of computational model to study reaching/grasping behaviours in humans

Institution: Institute of Cognitive Sciences and Technologies, National Research Council, Italy

Funds: EU project MindRaces: from Reactive to Anticipatory Cognitive Embodied Systems

Invited speaker travel and accommodation grant:

Topic: invited speaker for a talk titled "Subcortical involvement in action understanding"

Institution: University of Southern California, Los Angeles, USA

Funds: NSF INSPIRE project "Action, Vision and Language, and their Brain Mechanisms in Evolutionary Relationship"

Travel and accommodation grant:

Topic: Waseda-SSSA-KIST International Summer School "Fundamentals of Biorobotics"

Institution: University Campus Bio-Medico, Italy

Funds: University Campus Bio-Medico, Italy

Highlights CNR 2009-2010:

The article "Caligiore, D., Borghi, A.M., Parisi, D., & Baldassarre, G. (2010). TRoPICALS: A Computational Embodied Neuroscience Model of Compatibility Effects. *Psychological Review*, 117, 1188-1228" has been selected as one of the best paper published by CNR researchers and included in the "Highlights of CNR 2009-2010"

KEY PUBLICATIONS

1. **Caligiore, D., Parisi, D., Baldassarre, G. (2014).** Integrating Reinforcement Learning, Equilibrium Points and Minimum Variance to Understand the Development of Reaching: A Computational Model. *Psychological Review*, 121, 389-421. (**Impact Factor: 9.80**)
2. **Caligiore, D., Pezzulo, G., Miall, R.C., Baldassarre, G. (2013).** The contribution of brain sub-cortical loops in the expression and acquisition of action understanding abilities. *Neuroscience & Biobehavioral Reviews*, 37, 2504-2515. (**Impact Factor: 10.28**)
3. **Caligiore, D., Borghi, A.M., Parisi, D., & Baldassarre, G. (2010).** TRoPICALS: A Computational Embodied Neuroscience Model of Compatibility Effects. *Psychological Review*, 117, 1188-1228 (**Impact Factor: 9.80**)
4. **Caligiore, D., & Fischer, M. H. (2013).** Vision, action and language unified through embodiment.

- Psychological Research*, 77, 1-6 (Impact Factor: 2.378)
5. **Caligiore, D.**, Borghi, A.M., Parisi, D., Ellis, R., Cangelosi, A. & Baldassarre, G. (2013). How affordances associated with a distractor object affect compatibility effects: A study with the computational model TRoPICALS. *Psychological Research*, 77, 7-19 (Impact Factor: 2.378)
 6. **Caligiore, D.**, Tommasino, P., Sperati, V., & Baldassarre, G. (2014). Modular and hierarchical brain organization to understand assimilation, accommodation and their relation to autism in reaching tasks: a developmental robotics hypothesis. *Adaptive Behavior*, 22, 304–329. (Impact Factor: 1.11)
 7. Thill, S., **Caligiore, D.**, Borghi, A. M., Ziemke, T., & Baldassarre, G. (2013). Theories and computational models of affordance and mirror systems: An integrative review. *Neuroscience & Biobehavioral Reviews*, 37, 491-521 (**Impact Factor: 10.28**)

RESEARCH PROJECTS

Funded projects

- 2011-2014:** EU project IM-CLeVeR: Intrinsically Motivated Cumulative Learning Versatile Robots
- writing parts of the proposal
 - taking part
- 2010:** EU project ITALK: Integration and Transfer of Action and Language Knowledge in Robots
- taking part
- 2010:** UK project VALUE: Vision, Action, and Language Unified by Embodiment
- taking part
- 2008-2011:** EU project ROSSI: Emergence of communication in Robots through Sensorimotor and Social Interaction
- taking part
- 2006-2007:** EU project MindRaces: from Reactive to Anticipatory Cognitive Embodied Systems
- taking part

TEACHING

2009: Teacher assistant

Topic: Simulating motor behaviour by neural networks, course of “Robotics”

Institution: University Campus Bio-Medico, Italy

2004-2006: Teacher

Topic: Control systems

Institution: High-school - Istituto Tecnico Industriale Statale “A. Volta”, Subiaco (Roma), Italy

2001-2002: Teacher assistant

Topic: Electronic

Institution: University of Catania, Italy

INTERDISCIPLINARY COLLABORATIONS

Topic: embodied cognition, affordances processing in Parkinson's

Prof. R. Ellis, School of Psychology, University of Plymouth, UK

Prof. A. M. Borghi, Department of Psychology, University of Bologna, Italy

Prof. A. Cangelosi, Centre for Robotics and Neural Systems, University of Plymouth, UK

Prof. M. Fischer, Department of Psychology, University of Potsdam, Germany

Topic: computational neuroscience, cerebellum, motor control

Prof. R. C. Miall, School of Psychology, University of Birmingham, UK

Prof. T. Ziemke, Cognition & Interaction Lab, University of Skövde, Sweden

Dr G. Baldassarre, Institute of Cognitive Sciences and Technologies, National Research Council, Italy

Prof. E. Guglielmelli, Faculty of Biomedical Engineering, University Campus Bio-Medico, Italy

Prof. D. Parisi, Institute of Cognitive Sciences and Technologies, National Research Council, Italy

SUPERVISION OF STUDENTS

2012 – current: 2 PhD students, Centre for Robotics and Neural Systems, University of Plymouth, UK
2013: 1 Master degree student, Biomedical Engineering, University Campus Bio-Medico, Italy
2013: 1 Master degree student, Department of Computer Science, “Sapienza” University of Rome, Italy
2013: 1 Master degree student, Department of Psychology, University of Caserta, Italy
2010: 1 Master degree student, Biomedical Engineering, University Campus Bio-Medico, Italy
2009: 2 Master degree student, Department of Psychology, University of Bologna, Italy

ORGANIZATION OF SCIENTIFIC MEETING AND EDITORIAL BOARDS

2011: Guest editor of the Special issue of the international journal Psychological Research on “Vision action and language unified by embodiment” Editor-in-Chief: Prof. Bernhard Hommel
2010: Organization of EU ROSSI final review meeting, Munich, Germany

REFEREEING ACTIVITY

International Journals: Psychological Review, Topics in Cognitive Science, Neuroscience & Biobehavioral Reviews, Psychological Research, Frontiers in Neurorobotics, Frontiers in Cognitive Science, Cognitive Computation, IEEE Robotics & Automation Magazine, Adaptive Behavior, Journal of Behavioral Robotics

International Conferences: Neural Computation and Psychology Workshop (NCPW), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Biomedical Robotics and Biomechanics (BioRob), IEEE International Conference on Development and Learning (ICDL), IEEE International conference on Robotics and Automation (ICRA), Computational and Systems Neuroscience (Cosyne)

2013 - Reviewer for the “Georges Giralt PhD Award”

2011-2012 - Guest editor for the special issue of the international journal Psychological Research on “Vision action and language unified by embodiment”, Editor-in-Chief: Prof. Bernhard Hommel

REFERENCES

Dr. Gianluca Baldassarre (computational neuroscience, developmental robotics)

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Prof. Rob Ellis (cognitive psychology, embodied cognition)

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Homepage: <http://www.plymouth.ac.uk/staff/rellis#>

Prof. Angelo Cangelosi (neural network of language development, humanoid cognitive robotics)

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Prof. Anna M. Borghi (cognitive science, embodied cognition)

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