

## General Informations:

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current position: -research fellow at Institute of Cognitive Sciences and Technologies, National Research Council of Italy, ISTC-CNR, via San Martino della Battaglia 44, 00185 Roma, Italy.

## Curriculum vitae et studiorum:

- 1993/1994: High School Diploma (50/60), liceo scientifico Farnesina, Rome, ITALY
- 1999/2000: student in Psychology (entry), Università di Roma “Sapienza”.
- 09/03/2006: master’s degree in Psychology, (110/110 with honors) , Università di Roma “Sapienza”
- from 01/02/2007 to 31/01/2017: temporary research fellow with grant contract (assegno di ricerca) at Institute of Cognitive Sciences and Technologies, National Research Council of Italy, ISTC-CNR, Via S. Martino della Battaglia 44, 00185, Roma, Italy.
- from 01/02/2017 to 26/12/2018: temporary research fellow with fixed-term contract (contratto a tempo determinato) in the same research institute.

-contratto TD per Ricercatore III° livello, protocollo ISTC-CNR n. 0000202 del 25/01/2017, con riferimento a bando n. ISTC-33-2016-RM Art.23, pubblicato sulla G.U. n. 88 del 08/11/2016

-lettera di assunzione protocollo ISTC-CNR n. 0000128 del 18/01/2017, ai sensi dell'art 23. del DPR 171/91.

- from 27/12/2018: research fellow (permanent position) in the same research institute.

## Research projects:

“ECAgents: Embodied and Communicating Agents”,  
coordinator Stefano Nolfi  
website: [www.ecagents.org](http://www.ecagents.org)  
(project funded by European Union)

“Swarmanoid”  
coordinator Marco Dorigo  
website: [www.swarmanoid.org](http://www.swarmanoid.org)  
(project funded by European Union)

“IM-CLeVeR”  
coordinator Gianluca Baldassarre  
website: <http://www.im-clever.eu/>  
(project funded by European Union)

"GOAL-Robots"  
coordinator Gianluca Baldassarre  
website: <http://www.goal-robots.eu/>  
(project funded by European Union)

"+me: motivating children with autism spectrum disorders to communicate and socially interact through interactive soft wearable devices"  
coordinator Gianluca Baldassarre  
website: [www.plusme.it](http://www.plusme.it)  
(project funded by Regione Lazio)

## Publications:

- Sperati, V. (2006), “*A collective robotic environment, for studying the evolution of spatial cognition*” (in Italian), graduation thesis, Facoltà di Psicologia, Università di Roma “Sapienza”, tutor prof. Orazio Miglino, cotutor prof. Alessandro Londei.
- Sperati, V. & Baldassarre, G. (2006), “*Using entropy as index to evolve a couple of simulated robots capable of auto-organising behaviors*” (in Italian), in “*Scienze Cognitive e Robotica*”, proceedings of “III° Convegno Nazionale dell’AISC”, Erga Eds., pages 147-152.
- Sperati, V. , Trianni, V., Nolfi, S. (2008), “*Evolving coordinated group behaviours through maximisation of mean mutual information*”, *Swarm Intelligence*, Volume 2, Number 2-4, pages 73-95, Springer New York.
- Gigliotta, O., Sperati, V., Nolfi, S. (2009). “*Robotics Attack!*” (in italian), in “*Modelli, sistemi e applicazioni di Vita Artificiale e Computazione Evolutiva - WIVACE 2009*”, proceedings of VI italian workshop of Artificial Life and Evolutionary Computation, , pages 109-115, FEU, Napoli.
- Sperati, V. , Trianni, V., Nolfi, S. (2010). ”*Evolution of self-organised path formation in a swarm of robots*”, in proceedings of 7<sup>th</sup> International Conference on Swarm Intelligence (ANTS 2010), volume 6234/2010 of Lecture Notes in Computer Science LNCS, pages 155-166, M. Dorigo et al. editors, Springer Verlag, Berlin, Germany.
- Sperati, V., Trianni, V., Nolfi, S. (2011). “*Self-Organised Path Formation in a Swarm of Robots*”, *Swarm Intelligence*, Volume 5, Issue 2 (2011), pages 97-119, Springer New York.
- Dorigo, M. etal (2013), “*Swarmanoid: a novel concept for the study of heterogeneous robotic swarms*”, in *IEEE Robotics and Automation Magazine* numero 4 pag 60—71 volume 20 .
- Tommasino, P. etal (2012), “*McKibben Muscle Learning Equilibrium Postures*”, in 4<sup>th</sup> IEEE International Conference on Biomedical Robotics and Biomechatronics, BioRob 2012, pages 1229-1234.
- Marraffa, R. etal (2012), “*A Bio-Inspired Attention Model of Anticipation in Gaze Contingency Experiments with Infants*”, IEEE International Conference on Development and Learning and Epigenetic Robotics, ICDL

- Sperati, V., Trianni, V., Nolfi, S. (2014). “*Mutual Information as a task-independent utility function for evolutionary robotics*”, M. Prokopenko (ed.), Guided Self-Organization: Inception, Springer
- Sperati, V., Baldassarre, G. (2014). “*Learning where to look with movement-based intrinsic motivations: a bio-inspired model*”, IEEE International Conference on Development and Learning and Epigenetic Robotics, ICDL
- Ozcan, B., Sperati, V., Caligiore, D., Baldassarre, G. (2014) “*Motivating children with autism to communicate and interact socially through the +me wearable device*”, Nea-Science, year 1, vol. 5, pag. 59--65, XI° AISC Conference, Roma
- Ozcan, B. Sperati, V., Moretta, T., Scaffaro, S., Medda, A., Baldassarre, G. (2015) “*+me Project: final prototype for the experimentation with children with autism*” (Poster), Nea-Science, year 2 vol. 9, pag. 213--215, XII° AISC Conference.
- Meola, V., Caligiore, D., Sperati, V., Zollo, L., Ciancio, A., Taffoni, F., Guglielmelli, E., Baldassarre, G. (2015) “*Interplay of rhythmic and discrete manipulation movements during development: a policy-search reinforcement-learning robot model*”, in IEEE Transaction on Autonomous Mental Development, DOI [10.1109/TAMD.2015.2494460](https://doi.org/10.1109/TAMD.2015.2494460)
- Sperati, V., Ozcan, B. "Un dispositivo che aiuta a comunicare ed interagire" in D.A. per la ricerca e l'innovazione, n. 44 (2016), [www.daonline.info](http://www.daonline.info)
- Ozcan, B., Caligiore, D., Sperati, V. Moretta, T. Baldassarre, G. "Transitional Wearable Companions: A Novel Concept of Soft Interactive Social Robots to Improve Social Skills in Children with Autism Spectrum Disorder", vol 8, issue 4, pp 471--481 (2016) International Journal of Social Robotics. DOI [10.1007/s12369-016-0373-8](https://doi.org/10.1007/s12369-016-0373-8).
- Sperati, V., Ozcan, B. "The experimental device +me (version 1.0)", Technical report (2016), DOI: [10.13140/RG.2.1.3201.8166](https://doi.org/10.13140/RG.2.1.3201.8166)
- Sperati, V., Baldassarre, G. "A bio-inspired model learning visual goals and attention skills through contingencies and intrinsic motivations", (2017) IEEE Transactions on Cognitive and Developmental Systems, vol 10, issue 2, pp 326-344, DOI [10.1109/TCDS.2017.2772908](https://doi.org/10.1109/TCDS.2017.2772908)

- Sperati, V. et al. "*Acceptability of the Transitional Wearable Companion +me in Typical Children: a Pilot Study*" (2019), *Frontiers in Psychology* 10:125 DOI 10.3389/fpsyg.2019.00125
- Ozcan, B., Sperati, V. "*Lokahi: the wearable body pillow to foster an intimate interaction between two users through their heartbeat awareness*", (2019) to appear in *Proceedings of International Conference on Media and Art, ICMA2020*, London, United Kingdom, May 21-22, 2020, <https://panel.waset.org/conference/2020/05/london/ICMA>

## **Exhibitions:**

- MakerFaire 2014, European Edition, Roma (Italy): presented first prototype of "+me" device
- MakerFaire 2015, European Edition, Roma (Italy): presented third prototype of "+me" device
- Supernova 2015, Brescia (Italy): presented third prototype of "+me" device
- MakerFaire 2016, European Edition, Roma (Italy): presented fourth prototype of "+me" device.
- MakerFaire 2018, European Edition, Roma (Italy): presented first results of "+me" device experimentation on typical developed children.
- MakerFaire 2019, European Edition, Roma (Italy): presented pilot study of "+me" device experimentation on children with Autism Spectrum Disorder and Language Developmental Disorder.

## **Awards:**

- Start Cup Lazio 2015: menzione speciale "Social Innovation"; premio speciale "StartUp Initiative" (conferito da Banca Intesa San Paolo) al progetto "+me"
- Global Elevate Awards 2016: "Runner-Up" award in category "Healthcare" for project "+me".

## Visiting Experiences:

- From 26/11/2007 to 30/11/2007: Viktoria Institute (Gothebourg, SWEDEN)
- From 08/02/2008 to 02/06/2008: CSIRO, ICT Centre (Sydney, AUSTRALIA), with supervision of Dr. Mikhail Prokopenko

## Teaching Experiences:

- From 18/01/2012 to 21/04/2012: course “Physical Computing Elements” (28 hours), at Istituto Quasar (Rome, ITALY).

## Computer / Hardware skills:

- operating system: Linux, Windows, Android
- programming language: C++, PureData, Processing
- applications: Matlab, LaTeX, R, Inkscape, Fritzling
- hardware: good experience with Arduino boards
- electronics: good expertise, good skills in prototyping (developer of "+me" control board, developer of "Lokahi" contro board)
- 3D printing: basic expertise in printing and modeling (Thinkercad software)

## Language:

- Italian (mother tongue)
- English (good knowledge of spoken/written language)

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Valerio Sperati  
Roma 04/12/2019

Curriculum Vitae Valerio Sperati, December 2019