**Paolo Pagliuca**

Institute of Cognitive Sciences and Technologies (ISTC)

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**Research Interests**

Evolutionary Robotics, Evolutionary Algorithms, Evolutionary Strategies, Genetic Algorithms, Artificial Neural Networks, Swarm Robotics, Collective Behaviors, Cooperative/Competitive Behaviors, Evolution and Learning, Competitive Coevolution, Reinforcement Learning, Imitation Learning, Deep Learning, Image Classification, Video Classification

**Experience**

**AA 2023/24** Adjunct professor of the course of Laboratory of General Psychology I, Università degli Studi Federico II, Napoli

**01/02/2022 – now** Researcher, Institute of Cognitive Sciences and Technologies (ISTC), National Research Council (CNR), Roma

**02/05/2014 – 31/01/2022** Research Fellow, Institute of Cognitive Sciences and Technologies (ISTC), National Research Council (CNR), Roma

**Education**

**2014-2019** PhD in Computing, Faculty of Electronics and Mathematics, Plymouth University, United Kingdom

Thesis title: “Efficient Evolution of Neural Networks”

**2006-2009** Master Degree in Management and Automation Engineering, Università degli Studi Roma Tre, Roma

Thesis title: “Navigation of Robot Swarms based on Basic Behaviors”

**2003-2006** Bachelor Degree in Information Engineering, Università degli Studi Roma Tre, Roma

Thesis title: “Study of the Interdependent Technological Infrastructures through the Interoperability Input-Output Model”

**Publications: Peer-Reviewed Journal Articles**

Pagliuca, P., Inglese, D. Y., & Vitanza, A. (2023). Measuring emergent behaviors in a mixed competitive-cooperative environment. International Journal of Computer Information Systems and Industrial Management Applications, vol. 15, pp. 69-86

Pagliuca, P., & Nolfi, S. (2022). The dynamic of body and brain co-evolution. Adaptive Behavior, 30(3), 245-255.

Pagliuca, P., Milano, N., & Nolfi, S. (2020). Efficacy of modern neuro-evolutionary strategies for continuous control optimization. Frontiers in Robotics and AI, 7, 98.

Pagliuca, P., & Nolfi, S. (2019). Robust optimization through neuroevolution. PloS one, 14(3), e0213193.

Milano, N., Pagliuca, P., & Nolfi, S. (2019). Robustness, evolvability and phenotypic complexity: insights from evolving digital circuits. Evolutionary Intelligence, 12, 83-95.

Pagliuca, P., Milano, N., & Nolfi, S. (2018). Maximizing adaptive power in neuroevolution. PloS one, 13(7), e0198788.

Pagliuca, P., & Nolfi, S. (2015). Integrating learning by experience and demonstration in autonomous robots. Adaptive Behavior, 23(5), 300-314.

**Publications: Book Chapters**

Pagliuca, P., & Vitanza, A. (2023). Evolving aggregation behaviors in swarms from an evolutionary algorithms point of view. In Applications of Artificial Intelligence and Neural Systems to Data Science (pp. 317-328). Singapore: Springer Nature Singapore.

**Publications: Conference Proceedings**

Vitanza, A., Pagliuca, P., Cantucci, F., & Nolfi, S. (2023, October). Skeleton Timed Up and Go on MARIO robot. In 2023 IEEE International Conference on Metrology for Extended Reality, Artificial Intelligence and Neural Engineering (MetroXRAINE) (pp. 1171-1176). IEEE.

Pagliuca, P., & Vitanza, A. (2022, December). Self-organized Aggregation in Group of Robots with OpenAI-ES. In International Conference on Soft Computing and Pattern Recognition (pp. 770-780). Cham: Springer Nature Switzerland.

Pagliuca, P., Milano, N., & Nolfi, S. (2022, October). Automated Categorization of Behavioral Quality Through Deep Neural Networks. In 2022 IEEE International Conference on Metrology for Extended Reality, Artificial Intelligence and Neural Engineering (MetroXRAINE) (pp. 372-376). IEEE.

Felletti, S., Pagliuca, P., Sapienza, A., & Vilone, D. (2018, December). On the use of agent-based simulation for cognitive science. In 15th Conference of the Italian Association for Cognitive Sciences.

**Publications: Worskhop Proceedings**

Pagliuca, P., & Vitanza, A. (2023, November). N-Mates Evaluation: a New Method to Improve the Performance of Genetic Algorithms in Heterogeneous Multi-Agent Systems. CEUR Proceedings of the 24th Workshop From Objects to Agents (WOA 2023) (pp. 123-137)

**Contributes in Book of Abstracts**

Zribi, M., Pagliuca, P., & Pitolli, F. (2023, October). Convolutional Neural Networks for the Automatic Control of Consumables for Analytical Laboratories. BUILD-IT 2023 workshop, pp. 95-97, Roma, Italy, October 19 -20, 2023.

Tufo, G., Zribi, M., Pitolli, F. & Pagliuca, P. (2023, September). Advanced Computer Vision Techniques for Drug Abuse Detection. 21st IMACS World Congress (IMACS2023), vol. 23, Roma, Italy September 11 - 15, 2023.

**Presentations**

Pagliuca, P., & Vitanza, A. (2023, November). n-mates evaluation: a new method to improve the performance of genetic algorithms in heterogeneous multi-agent systems. Paper presented at the 24th edition of the Workshop From Objects to Agents (WOA23).

Pagliuca, P., & Inglese, D. Y. (2023, June). The importance of functionality over complexity. A preliminary study on feed-forward neural networks. Paper presented at the 31st edition of The Italian Workshop on Neural Networks (WIRN2023).

Pagliuca, P., Milano, N., & Nolfi, S. (2022, October). Automated Categorization of Behavioral Quality Through Deep Neural Networks. Paper presented at the satellite event PsychoBit of the 2022 IEEE International Conference on Metrology for Extended Reality, Artificial Intelligence and Neural Engineering (MetroXRAINE2022).

Pagliuca, P., & Vitanza, A. (2022, September). Evolving aggregation behaviors in swarms from an evolutionary algorithms point of view. Paper presented at the 30th edition of The Italian Workshop on Neural Networks (WIRN2022).

Felletti, S., Pagliuca, P., Sapienza, A., & Vilone, D. (2018, December). On the use of agent-based simulation for cognitive science. Symposium presented at the 15th Annual Conference of the Italian Association for Cognitive Sciences (AISC2018).

**National funded projects**

* **Project name:** Insights into the fast genome evolution of Gibbons through single-cell strand sequencing and simulation-based approaches (PRIN 2022)

**Role:** substitute Principal Investigator

**Years:** 2023-2025

* **Project name:** Tecnologie per l’agricoltura digitale sostenibile (E-crops)

**Role:** participant

**Years:** 2022-2023

* **Project name:** Social robotics for active and healthy ageing (SI Robotics)

**Role:** participant

**Years:** 2020-2022

**Conference Activities**

Member of the Program Committee of the 24th edition of the workshop “From Objects to Agents” (WOA23)

**Peer Reviewing Activities**

**International journals:**

* Frontiers in Psychology
* Evolutionary Intelligence

**International Conferences:**

* NaBIC 2022 - 14th World Congress on Nature and Biologically Inspired Computing 2022
* PPSN2016 - 14th International Conference on Parallel Problem Solving from Nature 2016

**Workshops:**

* WIRN 2023 - 31st Italian Workshop on Neural Networks 2023
* WOA2023 - 24th Workshop From Object to Agents 2023