Curriculum vitae di *Donato Romano*

Sottosettori ERC primari: *LS9_7 Environmental biotechnology and bioengineering; PE6_2 Distributed systems, parallel computing, sensor networks, cyber-physical systems;*
Eventuali sottosettori ERC secondario: *LS9_10 Veterinary and applied animal sciences; LS9_9 Plant pathology and pest resistance*

PERSONAL DETAILS

Family name, First name: Romano, Donato

Birthdate: 02-04-1986

Researcher unique identifier(s) (such as ORCID, Research ID, etc. ...):

ORCID: 0000-0003-4975-3495

Research ID: ITV-7496-2023

Scopus Author ID: 56487197100

URL for web site: https://www.santannapisa.it/en/donato-romano

URL for Google Scholar: https://scholar.google.it/citations?hl=it&user=OjsqczMAAAAJ&view_op=list_works&sortby=pubdate

- **Education and key qualifications**

22/12/2018 PhD in Biorobotics (with honours),
The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy.
Name of PhD Supervisor: Cesare Stefanini

2014 Master Degree in Agriculture Sciences and Technologies (with honours),
Department of Agriculture, Food and Environment, University of Pisa, Italy

- **Current position(s)**

2025 - Present Associate Professor in General and Applied Entomology,
The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy.

2023 - Present PI and founder of the Bio-Robotic Ecosystems Laboratory,
The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy.

2020 – Present Assistant Professor
The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy.

- **Previous position(s)**

2020 – 2025 Assistant Professor
The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy.

2018-2020 PostDoc position,
The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy.

2015-2018 PhD student with full scholarship in BioRobotics,
The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy.

March-May 2018: Visiting scholar with salary
HEIC center, BME department, Khalifa University, Abu Dhabi, UAE.

April-October 2015: Research Fellow,
The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy.

2014-2015: Research Assistant, Entomology Section, Department of Agriculture, Food and Environment, University of Pisa, Italy.

Le seguenti sezioni devono avere lunghezza totale compresa fra 2 e 4 pagine.

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements

Donato Romano is the author of more than 90 articles (first publication in 2015) on refereed international journals. He is collaborating with more than 130 co-authors worldwide, establishing cooperation with many national and international Institutions. He is the inventor of 4 patents. Romano's **h-index is 27** and the **number of citations is 2126** (source: Scopus, July 2025).

List of selected 10 research outputs:

1. **Romano, D.**, & Stefanini, C. (2025). Investigating social immunity in swarming locusts via a triple animal-robot-pathogen hybrid interaction. ***Advanced Intelligent Systems***. Doi: 10.1002/aisy.202400763.
2. Santaera, G., Zeni, V., Manduca, G., Canale, A., Mele, M., Benelli, G., Stefanini, C., & **Romano, D.** (2025). Development of an autonomous smart trap for precision monitoring of hematophagous flies on cattle. ***Smart Agricultural Technology***, 100842. https://doi.org/10.1016/j.atech.2025.100842
3. **Romano, D.**, & Stefanini, C. (2024). Robot-locust social information transfer occurs in predator avoidance contexts. ***International Journal of Social Robotics***, 16(3), 489-500. https://doi.org/10.1007/s12369-024-01100-w
4. Manduca, G., Santaera, G., Miraglia, M., Jansen Van Vuuren, G., Dario, P., Stefanini, C., & **Romano, D.** (2024). A Bioinspired Control Strategy Ensures Maneuverability and Adaptability for Dynamic Environments in an Underactuated Robotic Fish. ***Journal of Intelligent & Robotic Systems***, 110(2), 69. https://doi.org/10.1007/s10846-024-02080-9
5. Fazzari, E., Carrara, F., Falchi, F., Stefanini, C., & **Romano, D.** (2024). Using AI to decode the behavioral responses of an insect to chemical stimuli: towards machine-animal computational technologies. ***International Journal of Machine Learning and Cybernetics***, 15(5), 1985-1994. https://doi.org/10.1007/s13042-023-02009-y
6. Mo, X., Ge, W., Ren, Y., Zhao, D., Wei, D., & **Romano, D.** (2024). Locust-inspired jumping mechanism design and improvement based on takeoff stability. ***Journal of Mechanisms and Robotics***, 16(6), 061013. https://doi.org/10.1115/1.4063406
7. Manduca, G., Zeni, V., Moccia, S., Milano, B. A., Canale, A., Benelli, G., Stefanini, C., & **Romano, D.** (2023). Learning algorithms estimate pose and detect motor anomalies in flies exposed to minimal doses of a toxicant. ***iScience***, 26(12). https://doi.org/10.1016/j.isci.2023.108349
8. **Romano, D.**, Rossetti, G., & Stefanini, C. (2022). Learning on a chip: Towards the development of trainable biohybrid sensors by investigating cognitive processes in non-marine Ostracoda via a miniaturised analytical system. ***Biosystems Engineering***, 213, 162-174. https://doi.org/10.1016/j.biosystemseng.2021.11.004
9. **Romano, D.**, Benelli, G., & Stefanini, C. (2021). Opposite valence social information provided by bio-robotic demonstrators shapes selection processes in the green bottle fly. ***Journal of the Royal Society Interface***, 18(176), 20210056. https://doi.org/10.1098/rsif.2021.0056
10. **Romano, D.**, Benelli, G., & Stefanini, C. (2019). Encoding lateralization of jump kinematics and eye use in a locust via bio-robotic artifacts. ***Journal of Experimental Biology***, 222(2), jeb187427. https://doi.org/10.1242/jeb.187427
    This paper provided insights into how locusts process lateralized visual stimuli, aiding in the development of responsive models for insect interactions in complex settings. This study underscored DR ability to integrate advanced behavioural responses in insects by developing and using biomimetic robotic systems.

Peer recognition

1. Donato Romano has been repeatedly invited by leading journals to contribute opinion papers on key topics of his scientific interest, reflecting his recognized expertise in the fields (e.g. **Romano**, 2023, Science Robotics, https://doi.org/10.1126/scirobotics.adh1824 ; Schmickl & **Romano**, 2024, Science

Robotics https://doi.org/10.1126/scirobotics.ado5566 ; **Romano**, 2025, Current Opinion in Insect Science, https://doi.org/10.1016/j.cois.2025.101337).

2. Winner of the prize "AgroInnovation Award", established by Image Line and Accademia dei Georgofili, for best PhD thesis in Precision Agriculture (May 2020).
3. Winner of the prize "Italian National Bioengineering Group and Patron" for best PhD thesis in Bioengineering (Brixen, Italy, 11 September 2019).
4. F1000Prime Recommendation on the article: Encoding lateralization of jump kinematics and eye use in a locust via bio-robotic artifacts., Journal of Experimental Biology, 2019 (DOI: 10.3410/f.734453040.793559235). https://f1000.com/prime/734453040?subscriptioncode=adb0fda9-18c3-4612-99fd-e92b74078cff&utm_medium=email&utm_source=prime_ypp.
5. Winner of the Article of the Year Award 2020 for Applied Bionics and Biomechanics with the article "Impact of Different Developmental Instars on *Locusta migratoria* Jumping Performance" (03 July 2021).
6. Highlight Speaker at RoboSoft 2024 Workshop "Bio-Hybrids: When Robots Come Alive" with the highlight talk "Insect-robot interaction and biohybrid information transfer: a paradigm shift for biological investigation and sustainable environmental management."(San Diego, CA, USA, 14-17 April, 2024).
7. Invited Speaker at RoboSoft 2024 Workshop "Into the Wood: Soft Machines for Ecosystem Exploration" with the talk "The emergent Field of Animal(Organism)-Robot Interaction: Toward a Symbiotic Future at the Intersection of Biology and Robotics" (San Diego, CA, USA, 14-17 April, 2024).
8. Keynote lecturer for the Winter School on "Modelling and Measuring Biohybrid Multi-Level Complex Systems" organized by the university of Graz, Austria, with the Keynote talk "From life-like to living technologies – the new frontiers of bionics science and technology" (20 February, 2024).
9. Invited speaker at the seminar series on "Dialogues on Ethology and Behavioural Ecology" with the talk "New challenges of biorobotics: from copying nature to eco-integrating robots with living organisms" (Ethology Unit, University of Pisa, Pisa, 15 May, 2023).

ADDITIONAL INFORMATION

Other contributions to the research community

Donato Romano has made significant contributions beyond his research achievements, actively engaging in research management, outreach, and third-mission responsibilities. His interdisciplinary approach, leadership in pioneering research areas, and commitment to fostering collaboration have had a lasting impact on both academia and industry.

Research Management and Leadership

Romano has demonstrated strong research leadership by securing and managing multiple large-scale national and international research projects. He is the Principal Investigator (PI) or Coordinator for several international (e.g. EU-funded project "SENSORBEES", EU-funded project "ECOBOTICS.SEA", National Geographic Meridian project "OCEAN-ROBOCTO") and national projects (e.g, ASI project "REGOLIFE", PRIN project "COSMIC"), and he has successfully led teams working on biohybrid systems, bioinspired engineering, and sustainable environmental applications. His ability to coordinate interdisciplinary teams—comprising engineers, entomologists, computer scientists, and ecologists—highlights his expertise in research management. Through these projects, he has advanced innovative biohybrid technologies, improving our understanding of animal behaviour and ecology while developing new applications in robotics and artificial intelligence.

Editorial and Scientific Community Engagement

Romano actively contributes to the global scientific community by serving as Associate Editor for several high-impact journals, including *Pest Management Science*, *Journal of Field Robotics*, *IEEE Transactions on Medical Robotics and Bionics*, *Insects*, *iScience*, and more. His role as a peer reviewer for leading journals such as *Science*, *Nature Communications*, and *Science Robotics* underscores his expertise and recognition within the research community.

Additionally, he has played a key role in organizing and chairing many international workshops and symposia. Notably, he initiated the first "Workshop on Animal-Robot Interaction" at IEEE/RSJ IROS 2020, a landmark event that introduced the field to a broader audience in both robotics and biology. His

commitment to fostering interdisciplinary dialogue has strengthened the global network of researchers in bioinspired robotics, zoology/entomology, and ecology.

Outreach and Third Mission Activities

Beyond academia, Romano has actively engaged in public outreach and science communication. His research has been featured in major media outlets including*, Linea Verde Italia* (RAI 1), *TG5* (Mediaset, Canale5), *TG Leonardo* (RAI3), *Smart City-Radio24*, *Sky TG24*, *Corriere della Sera*, *Il Sole 24 Ore*, *New Scientist*, and *MIT Horizon*. By sharing his findings with the general public, he has raised awareness of bioinspired engineering and its applications in sustainable agriculture and biodiversity conservation.

Romano is also dedicated to technology transfer and innovation. He is the co-founder of HUBILIFE srl, an academic spin-off company, which develops bioinspired products such as HUBI-Mosquito, an innovative device for controlling hematophagous arthropods with minimal environmental impact, as well as underwater robotic swarms for autonomous inspection and exploration of aquatic dynamic environments. His work in patenting new technologies demonstrates his commitment to bridging academic research with real-world applications.

In recognition of his contributions, Romano was awarded the "Lucani fuori dal Comune" prize (December 27, 2024), a prestigious honour celebrating outstanding Lucanian citizens who have distinguished themselves in their fields and have brought international recognition to Basilicata.

Contribution to Education and Interdisciplinary Training

With a background spanning agricultural sciences, entomology, and biorobotics, Dr. Romano has championed interdisciplinary education. He actively mentors students and early-career researchers, integrating knowledge from multiple disciplines to train the next generation of scientists and engineers. His leadership in educational initiatives within Scuola Superiore Sant'Anna has strengthened the institution's reputation as a hub for cutting-edge research and innovation.

Through his multifaceted contributions to research management, outreach, and interdisciplinary collaboration, Dr. Romano has established himself as a leader in biohybrid technologies and biomimetic engineering, significantly enriching both the scientific community and society at large.

Career breaks, diverse career paths and major life events

NA

The Candidate authorises the processing of his personal information under D.Lgs. 196/03.