



 Politecnico di Bari, DMMM, via Orabona 4, 70125 Bari (Italy)



<https://vitocacu.me>



vito.cacucciolo@poliba.it, vito.cacucciolo@omnigrasp.com, viticacu@mit.edu



<https://twitter.com/VitoCacu>



<http://www.linkedin.com/in/vito-cacucciolo>



<https://orcid.org/0000-0001-6411-8698>



[Google Scholar](#)

OVERVIEW

Vito is a **senior scientist** at **Politecnico di Bari** and **CEO** of spin-off [Omnigrasp](#), working to push the boundaries of **soft-matter machines** and **robotic materials** both in academia and industry. Vito has been the **driving force** behind the development of the **world-first stretchable pumps** for fully integrated fluidic artificial muscles, soft exoskeletons and smart clothing, published in *Nature* in **2019**. Vito created an **electroadhesion-based soft gripper** for delicate and fragile objects that can lift 1000 times its own weight. Vito received the prestigious SNSF **Bridge PoC fellowship** for technology transfer in 2020.

Vito received his PhD from Scuola Superiore Sant'Anna Pisa (Italy) in 2017 (Prof. Laschi's group). The PhD focused on soft robotics and on the understanding of muscle activation and control in cephalopods (e.g., the Octopus) using mathematical models and bio-inspired AI algorithms. From 2017 to 2021 Vito worked as a scientist at EPFL (Prof. Shea's group), where he learned to design and fabricate miniaturised and integrated artificial muscles for the next generation of robots and wearables.

Vito published **17 articles in peer-reviewed journals** and **14 articles in peer-reviewed conference proceedings**, has an **h-index of 15** and over **2100 citations** (source: [Google Scholar](#)).

Vito's **long-term goal** is to **understand physical intelligence** and use it to create **adaptive materials, human-centred robots, and smart wearables**.



(Left) detail of a stretchable pump and (center) a pump and fluidic muscles mounted on a glove for muscle support and thermal regulation, *Nature* 2019. (Right) Omnigrasp soft gripper lifting fruit using silicone fingers and electro-adhesion.

CURRENT POSITIONS

01/11/2021 **Senior Scientist**
ongoing Politecnico di Bari, Bari, Italy.

30/03/2022 **CEO and co-founder**
ongoing Omnigrasp Srl. *Creating robots with a soft touch*

01/08/2022 **Research Affiliate**
ongoing MIT Media Lab, Cambridge, US.



OMNIGRASP
AUTOMATION MADE SIMPLE



PROFESSIONAL EXPERIENCE

09/06/2022 Associate Professor, National Scientific qualification
Ministero dell'Università e della Ricerca, Italy.

01/01/2021 **Visiting Professor**
31/10/2021 Politecnico di Bari, Bari, Italy.
Electroadhesion and contact mechanics



01/11/2020 **BRIDGE Fellow**
31/10/2021 Swiss National Science Foundation and Innosuisse
Bring electroadhesion soft grippers to the market

BRIDGE

01/08/2017 **Scientist** at EPFL
31/10/2021 Neuchatel, Switzerland. Soft Transducers Laboratory (LMTS).
Prof. Herbert Shea. *Stretchable pumps, soft robotic grippers*

EPFL

04/04/2017 **Postdoctoral researcher** at Scuola Superiore Sant'Anna
31/07/2017 Pisa, Italy. The BioRobotics Institute.
Soft robots for pipeline inspection and maintenance.



Sant'Anna
Scuola Universitaria Superiore Pisa

01/04/2016 **Research Internship** at EPFL
30/10/2016 Lausanne, Switzerland. LMTS and LIS
ElectroHydroDynamic pumping

EPFL

04/11/2013 – **Research Assistant** at Scuola Superiore Sant'Anna
03/04/2017 Pisa, Italy. The BioRobotics Institute.
Mechatronics for soft robotics.



Sant'Anna
Scuola Universitaria Superiore Pisa

EDUCATION

03/04/2017 **PhD in BioRobotics, 100/100 with honors** at Scuola Superiore Sant'Anna
Pisa, Italy. The BioRobotics Institute.
PhD supervisors: Prof. Cecilia Laschi, Prof. Matteo Cianchetti

11/06/2013 **Master degree in Mechanical Engineering, 110/110 cum laude**
Politecnico di Bari, Bari (Italy).

23/05/2013 **Master of Science in Mechanical Engineering, GPA 3.96/4.00**
New York University, Tandon School of Engineering, New York, NY (United States).
Specialisation: control and dynamic systems

GRANTS

01/06/2022 **Horizon EUROPE RIA**, € 900 k. HARTU (Handling with AI-enhanced Robotic Technologies for flexible manufactUring). Role: PI for Omnigrasp.

01/06/2022 **Horizon 2020 RIA**, € 400 k. MERGING (Manipulation Enhancement through Robotic Guidance and Intelligent Novel Grippers). Role: PI

18/02/2021 **Innogrants**, EPFL, CHF 100 k. Topic: soft grippers with electroadhesion. Role: Co-Applicant.

- 27/08/2020 **Bridge Proof of Concept**, Swiss National Science Foundation and Innosuisse – Swiss Innovation Agency, CHF 130 k. Topic: soft grippers with electroadhesion. Role: PI.
- 30/09/2019 **JSPS Fellowship for Research in Japan**, Title: Fluidic muscles for untethered soft exoskeletons, JPY 220 k/month. Role: PI. (postponed due to covid-19)
- 01/06/2019 **SNSF – JSPS, Strategic Japanese-Swiss Science and Technology Program (SJSSTP)**, Title: Stretchable ElectroHydroDynamics, CHF 247 k (EPFL side). Role: Co-Applicant.
- 27/05/2019 **Robert Gnehm Grant for Parent Postdocs**, CHF 20 k. Role: Main Applicant.
- 30/04/2019 **H2020-NMBP-FOF-2019**, Title: MERGING (Manipulation Enhancement through Robotic Guidance and Intelligent Novel Grippers), € 1,168,750 (EPFL side). Role: Co-Applicant.

INVITED TALKS

- 27/09/2022 AIRS workshop on Soft Robotics, Keynote talk. Shenzhen Institute of Artificial Intelligence and Robotics for Society (AIRS, <https://airs.cuhk.edu.cn/en>).
- 24/08/2022 EUROMECH Colloquium Mechanics of Soft Active Polymers, European Mechanics Society, Southampton, UK.
- 09/06/2022 2022 EuroEAP Conference, Chianciano Terme, Italy. “Soft grippers with electroactive contacts”. Conference of European society of electroactive polymers.
- 09/10/2021 I-RIM 3D 2021, workshop *Robotic Materials and Structures*. “Electroactive Soft Robots”. Conferenza Italiana di Robotica e Macchine Intelligenti.
- 24/02/2021 Boston University, Boston, US, Master course in Mechanical Engineering. “Electroactive polymers for soft robotics”
- 19/11/2020 Soft Robotics Podcast IEEE RAS Soft Robotics Technical Committee <https://www.ieee-ras.org/soft-robotics/podcasts>
- 30/10/2020 ETH Zurich, Switzerland. Virtual Seminar Series on Materials for Robotics. “Electroactive artificial muscles for soft robotics”
- 29/04/2020 2020 SPIE EAPAD Conference, Anaheim, CA, US. (Held online due to COVID-19). “Soft pumps for robots and wearables”
- 24/07/2019 The Hamlyn Center, Imperial College London, UK. “Stretchable pumps for robotics and wearable circulatory systems”
- 09/01/2019 Doctoral School of Mechanical Engineering, Politecnico di Bari, Italy. “Soft-Matter technologies for robots and wearables”
- 12/06/2017 Shibaura Institute of Technology, Tokyo, Japan, Master course in Mechanical Engineering. “Fluidic Actuators for Soft Robotics”
- 25/05/2017 University of Pisa (UNIFI), Scuola Superiore Sant’Anna Pisa, Italy, joint Master course in Bionics Engineering. “Theoretical foundations of Finite Element Analysis” (2 days)

ORGANIZATION of SCIENTIFIC EVENTS

- 05/2022 **MRS Spring 2022 Symposium organizer** “Materials, Power Sources, Sensors, Actuators and Mechanics for Untethered Soft Robots” Honolulu, Hawaii (USA).
- 31/05/2020 **ICRA 2020 Workshop organizer** “Beyond Soft Robotics: Pioneer Perspectives and Interdisciplinary Collaboration” at *IEEE International Conference of Robotics and Automation*, Paris (France), 2020. (Held online due to COVID-19). Over 1,000 attendees

24/04/2018 **Workshop organizer** “Fluid-driven Soft Robots: a collaborative workshop” at IEEE International Conference on Soft Robotics (RoboSoft), Livorno, Italy

INDUSTRIAL INNOVATION

04/11/2021 **Swiss Robotics Day** (Zurich, Switzerland) by Swiss NCCR Robotics. Demo booth.

31/08/2021 **EP Patent application** Digumarti K, Cacucciolo V, Shea H, “Electroadhesive gripping system and method for gripping an object”

12/04/2021 **Hannover Messe** interactive virtual demo booth, as part of Swiss NCCR Robotics

12/01/2021 **CES 21** all digital event, interactive virtual demo booth, as part of Swiss NCCR Robotics

11/01/2021 **PCT Patent application** Cacucciolo V, Shea H, “Electroadhesion-based shear gripping system and method of using thereof”

27/08/2020 **Bridge Proof of Concept**, 1-year funding for the technology transfer of research results on soft grippers to the market. SNSF and Innosuisse – Swiss Innovation Agency

21/05/2019 **Patent application**. Cacucciolo, V, Shea, H, Maeda, S, Floreano, D, Shintake, J “Stretchable electrohydrodynamic pump”.

02-06 2018 Start-up Training: Business Concept, Innosuisse – Swiss innovation Agency

REVIEWING and EDITORIAL ACTIVITY

2021 - present Member of Editorial Board of Frontiers in Robotics and AI, Soft Robotics

2013 - present Reviewer for: *Science Robotics* (AAAS), *Advanced Materials* (Wiley), *IEEE IROS*; *IEEE Robotics and Automation Letters*; *IEEE Trans. on Robot.*; *Smart Materials and Structures*; *ASME JDSMC*; *IEEE RoboSoft*, *Soft Robotics*

AWARDS

03/06/2021 **1st prize Industry Challenge 2021** EuroEAP Society. Award of € 1000.

01/06/2019 **Cover figure** Soft Robotics Journal (vol 6, issue 3, June 2019): Lifting without squeezing: a delicate yet strong soft gripper

12/11/2014 **1st prize**, Master Thesis Award MIMOS 2013, on modelling and simulation: “Biomechanical analysis of a human knee joint”. Award of € 1500.

01/09/2012 **Innovation Fellowship**, Office of graduate admission, NYU Tandon School of Engineering. <https://engineering.nyu.edu/>. Award of \$ 7500.

Selected OUTREACH

07/02/2020 Radio Interview on Soft Robotic Insects at radio show Unknown Territories, **University of California Santa Barbara**, Santa Barbara, CA, US.

14/11/2019 TecDay at **lycée Denis-de-Rougement**, Neuchatel (Switzerland). Lecture and hands-on demo on electro-active polymers for high school students.

26/11/2018 Demo booth on Soft Grippers at **Materials Research Society (MRS) Fall Meeting**, Boston (US). Around 10,000 attendees.

28/04/2017 Invited lecture for high school students “Verso i robot del futuro: la robotica diventa soft” **Liceo Scientifico da Vinci** (Maglie, LE, Italy), within the project Scienza Oggi.

2013-2017 **Robocup jr**, Robotics competitions for STEM students. Match Referee.

STUDENTS SUPERVISION

- 2021-ongoing Robert Hennig, **PhD student** in **Robotics control and intelligent systems**, EPFL (Neuchâtel, CH)
- 2018-19 Giulio Grasso, **M.Sc.** in **Mechanical Engineering**, Politecnico di Bari (Bari, Italy). Master Thesis at EPFL-LMTS. Topic: *Artificial Skins for surface analysis with robotic hands*.
- 2018-19 Yu Kuwajima, **M.Sc.** in **Mechanical Engineering**, Shibaura Institute of Technology (Tokyo, Japan). Research internship at EPFL-LMTS with the **TOBITATE! Scholarship, JSPS**. Topic: *Stretchable Pumps for Soft Robotics*.
- 2018 Gianluigi Grandesso, **M.Sc.** in **Mechatronics Engineering**, Università di Trento (Trento, Italy). Research visit at EPFL-LMTS with the SMG grant from EuroEAP society. Topic: *Electroadhesion Robotic Grippers*.
- 2017 Francesco Iori, **B.Sc.** in **Mechanical engineering**, Davide Bray, **M.Sc.** in **Aerospace engineering**, Scuola Superiore Sant'Anna Pisa (Pisa, Italy). Industrial research project on Soft Robots for pipe inspection and maintenance
- 2017 Davide Bray, **M.Sc.** in **Aerospace engineering**, Scuola Superiore Sant'Anna Pisa (Pisa, Italy). Master thesis on legged locomotion on uneven terrains with a soft robot
- 2015-16 Prof. Hiroki Shigemune (PhD, 2018), **M.Sc.** in **Applied Physics**, Waseda University, Tokyo, Japan. Research Internship at Scuola Superiore Sant'Anna Pisa with the **TOBITATE! Scholarship, JSPS**. Topic: *Bio-inspired control of soft robotic arms*