Giulia**D'Angelo**

Contacts

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Languages

Italian (mother tongue)
English (proficiency)

Current Position

Marie Skłodowska-Curie Postdoctoral Fellow - Department of Cybernetics, Faculty of Electrical Engineering, Czech Technical University in Prague

Software skills

Programming Languages
Python, C++, Matlab, JavaScript, HTML, Brian, Neuron
Middleware & Tools
Yarp, ROS
Neuromorphic platforms
ATIS, SpiNNaker, Speck, Loihi
Tools & Libraries
PyTorch, snnTorch, sinabs, Tonic, Metavision, bimvee

Personal profiles

Google scholar
ORCID
SCOPUS ID: 57215559435
Linkedin
Twitter
Github

Personal Interest

I focus on high-performance active visual algorithms for online robotic applications. I developed attention mechanisms using intensity, motion estimation, and depth cues to enable robotic interaction through saccadic eye movements, leveraging neuromorphic sensing and computing.

I have nine years of **research and development** experience in low-power, low-latency **computer vision** applications for real-time robotics. I have designed, implemented, and led a wide range of projects leveraging spiking neural networks in combination with state-of-the-art bioinspired event-based cameras and neuromorphic computing for **embodied active vision systems**.

Work Experience

2024 - NOW — **Marie Skłodowska-Curie Postdoctoral Fellow** — Czech Technical University (Prague, Czechia)
Embodied Active Vision - EveNt DrivEn Active Vision for Object peRception (ENDEAVOR) - Event-based vision sensing and neuromorphic computing. Principal Investigator & Project leader.

2022 - 2024 — **Postdoctoral Researcher - Computer Vision for Robotics** — Italian Institute of Technology (Italy)
Event Driven Perception for Robotics - R&D & Project management

May-June, 2023 — **Visiting Researcher - Embodiment for robotics** — Czech Technical University (Prague, Czechia)
Embodied Cognition and Sensorimotor Contingency Theory for visual robotics.

2019 - 2022 — **Ph.D. Computer Vision for Robotics (President's Doctoral Scholar Award)**
The University of Manchester - Italian Institute of Technology (IIT)
Bio-inspired visual attention models exploiting event-driven sensing and neuromorphic platforms for the robot iCub. Motion estimation, depth extraction, figure-ground segmentation, ego-motion segregation. - R&D & Project managment
Ph.D. Supervisors: Dr. Chiara Bartolozzi (IIT) & Prof. Angelo Cangelosi (UOM)
VIVA Ph.D. Examiners: Prof. Giacomo Indiveri (ETH) & Prof. Piotr Dudek (UOM)

2018 - 2019 — **Software Engineer - Computer Vision for Robotics** — Italian Institute of Technology (Genoa, Italy)
∘ Software engineer, Middleware project combining Yarp Network, IBM Cloud services and Vodafone 5G for a robotic conversational healthcare application with IBM and Vodafone Italia.
∘ Software engineer, Computer Vision, stealth project with Sony Japan.
Programming Languages and Tools: JavaScript, Matlab, C++, IBM Cloud services

2016 - 2017 — **Research Fellow, Computer Vision - Predictive Coding & Robotics** — King's College of London (London, UK)
An egocentric neuromorphic network of the 3D space through supervised learning.

Technology Transfer - R&D & Project managment

2025 — **CTU, Wandering around: A bioinspired approach to visual attention through object motion sensitivity** — Vision-Robotics
Real-time selective attention through object motion sensitivity. Demo link

2024 — **CTU-Lille Uni., Event-driven nearshore and shoreline coastline detection on SpiNNaker neuromorphic hardware** — Vision-Robotics
Event-based spiking neural network on the neuromorphic hardware SpiNN-3. Demo link

2023 — **ETH-IIT, Robotic sensory-motor paint brush** — Robotics
Event-based trajectory painting on neuromorphic hardware. Demo link

2022 — **IIT, Event-driven Proto-object based saliency in 3D space** — Vision & Robotics
Event-based depth extraction for visual attention. Demo link

2020 — **IIT, Proto-object based saliency for event-driven cameras** — Vision & Robotics
Event-based visual attention. Demo link

2018, 2019 — **IIT-IBM, Robotic conversational application for health care** — Human-Robot Interaction
Lead software engineer of the JointLab IIT-IBM, and Vodafone Italia. This project has been showcased at IROS 2018 & Milan Digital Week Event 2019. Demo link & Github

Projects' Demos 👀 Youtube link

Editor & Communication Chair

I firmly believe that effective communication is about conveying a single, clear message with passion. I am the official Editor of **NeuroPAC** (in collaboration with The University of Maryland), Chair of **Open Neuromorphic** and co-organiser of **Telluride Neuromorphic Engineering Workshop**.

Women&Technologies Young Ambassador

Women&Technologies - Associazione Donne e Tecnologie. I advocate for women in STEAM at both national and international events.

Gender dimension & Diversity inclusion

I foster gender equality and diversity, encouraging open discussions and a safe environment ensuring **fairness**, **openness**, and addressing microaggressions. In my career, equality is a top priority.

Education

2019 - 2022 **PhD in Computer Science (Neuromorphic algorithms) with honors** The University of Manchester

2015 - 2017 **MSc Degree in Neuroengineering with honors** University of Genoa

2011 - 2015 **Bachelor's Degree in Biomedical Engineering** University of Genoa

Competitive Grants & Awards

2025 **Tecnovisionarie® 2025** International Award
Female researchers and scientists under 40 leading the way in AI, new materials, space, energy and the environment, health, and biotechnology.

2025 **Nature Communications Editors' Highlights: "Event-Driven Figure-Ground Organisation model for the humanoid robot iCub"** Nature Communications
Among the best 50 papers in Applied physics and mathematics

2024 **Marie Skłodowska-Curie Actions Award - Postdoctoral Fellowship** European Union
EveNt DrivEn Active Vision for Object peRception (ENDEAVOR)

2023 **Best Oral Presentation** Women in Vision UK
Winter Meeting

2023 **President's Doctoral Scholar Award** The University of Manchester
Highest accolade bestowed upon postgraduate members. Academic excellence and leadership potential.

2022 **FameLab National Finalist** FameLab
International Scientific Talent Show, 3 minutes scientific speech

2022 **NEUROTECH EU Fellowship** Neuromorphic Computing Technology community in Europe
European Fellowship to attend Capocaccia Neuromorphic Workshop 2022

2019 **HiPEAC EU Collaboration Grant** SNN neuromorphic attention model
European collaboration Grant, 3 months collaboration project finalised with the publication: "Event-driven bio-inspired attentive system for iCub humanoids robot on SpiNNaker" (DOI: 10.1088/2634-4386/ac6b50)

Workshop & Conference organisation

2025 **(ongoing) Organising committee** Neuromorphic Computing for Development and Learning Workshop (NCDL)
International Conference on Development and Learning IEEE (ICDL)
Prague, Czech Republic

2025 **(ongoing) Organising committee** Workshop on Neuromorphic Perception for Real World Robotics (NeuRobots)
IEEE/RSJ International Conference on Intelligent Robots and Systems IEEE (IROS)
Hangzhou, China

2025 **(ongoing) Media and Communication Chair, Organising committee** IEEE ICDL 2025
International Conference on Development and Learning
Prague, Czech Republic

2025,2024 **(ongoing) Group Leader** Telluride Neuromorphic Engineering Workshop
Telluride, Colorado, USA

2024, 2023 **Program committee, Organising committee** International Conference on Neuromorphic Systems (ICONS)
Santa Fe, New Mexico, USA

2023 **Program committee, Organising committee** Living Machines (LM) Conference
Tutorial 'Real-time motion estimation with SNNs', Genoa, Italy

Other professional experiences

Professional Dancer & Dance Teacher
2009 - NOW
I have been studying dance since 1994. I am a professional dancer and teacher of Lindy Hop, Jazz steps and Swing social dance, Hip-Hop & House Dance. Winner of national and international competitions: Yo! Festival (Rome 2012), Au delà des prèjugès (Lausanne 2015), ect). Associazione Italiana Maestri di Ballo (AIMB), professional dance teacher certificate.

Voluntary paramedic
2014 - 2019
Public Assistance, national first aid certificate, 118 Certificate

Seminars & Lectures

2025, 2023 **Event Based Revolution for Robotic Perception** Czech Technical University
Prague, Czech Republic

2024 **Bioinspired and neuromorphic algorithms for active vision** Charles University
Prague, Czech Republic

2024 **Saccadic revolution - Bioinspired active vision for robotics** The University of Sussex
Sussex, United Kingdom

2021 **The Neuromorphic iCub, Event-Driven Perception for Robotics** University of Genoa
Genoa, Italy

Invited talks

2025 **Neuromorphic active vision for embodied object perception**
INVICTA School - INESC TEC, Campus da Faculdade de Engenharia da Universidade do Porto
Porto,Portugal

2025 **Awareness, adoption, and directions of neuromorphic technologies, STANCE**
Fraunhofer-Institut für Integrierte Schaltungen IIS
Nuremberg,Germany

2025 **Embodied Active Vision for robotics** Embodied Agents in Contemporary Visual Art
Berlin,Germany

2024 **Rising Star Researcher Keynote - Neuromorphic algorithms to model visual attention**
ECCV 2024, Neuromorphic Vision Workshop
Milan, Italy

2024 **Saccadic Revolution** The University of Sussex
Sussex,UK

2024 **Bioinspired and neuromorphic algorithms for robotics** IEEE Annual Meeting - Czechoslovakia
Prague,Czechia

2024 **Neuromorphic algorithms to model visual attention**
International School on Artificial Intelligence for Cognitive Technologies
Naples,Italy

2023 **Bioinspired intelligent visual attention system for the humanoid robot iCub exploring event-driven sensing and neuromorphic hardware** Women in Vision UK Winter Meeting
Cambridge

2023 **Event-driven and neuromorphic visual attention algorithms for online robotic applications**
IEEE Instrumentation & Measurement Society Workshop
Nancy, France

2023 **What's catching your eye?** Open Neuromorphic
Online

2023 **L'intelligenza dei robot ("The intelligence of the robots")** Women&Tech
Online

2023 **Bioinspiration, is it needed? Bioinspired and neuromorphic systems to model visual attention mechanisms** Technische Universität Berlin
Germany

2023 **The Event-Based Revolution** XIV Symposium on Bioengineering, FEUP - Faculdade de Engenharia da Universidade do Porto
Porto, Portugal

2022 **"Attenzione" (Attention)** FameLab Finalist
Perugia, Italy

2022 **What is digital technology?** Elle Active!2022
Milan, Italy

2022 **What attracts your attention?** Technical University of Denmark
DTU, Copenaghen, Denmark

Active Collaborations

2019 - NOW
Prof. Ernst Niebur Johns Hopkins University - "Saliency-based bioinspired attention and active vision"
Dr. Chiara Bartolozzi Italian Institute of Technology - "Neuromorphic visual perception and embodiment"
Prof. Giacomo Indiveri ETH Zurich - "Neuromorphic algorithms and computing for vision"
Prof. Yulia Sandamirskaya Zurich University of Applied Sciences (ZHAW) - "Neuromorphic HRI"
Prof. Jan Antolik Charles University - "Modelling vision"
Dr. Dylan Muir Synsense - "Neuromorphic vision on Speck"
Dr. Alexander Hadjiivanov Netherlands eScience Center - "Understanding the retina layers"
Dr. Mazdak Fatahi & Prof. Pierre Boulet - Université de Lille - "SNNs on neuromorphic HW"
Prof. James Knight The University of Sussex - "Neuromorphic algorithms for navigation on GeNN"
Prof. Michael Furlong The University of Waterloo - "SNNs for active vision control"

Editorial & Reviewing Work

I am a **IOP Trusted Reviewer** for the journal Neuromorphic Computing and Engineering. I have also reviewed work for journals such as Nature Communications, Neurocomputing (Springer Nature) and Frontiers in Neuroscience, as well as conferences including IEEE CVPR, IEEE IROS, IEEE/ACM ICONS, IEEE BIOCAS, and IEEE AICAS.

Academic Supervision

2019 - NOW
Tutoring and mentoring of several M.Sc. and PhD students. Skills learnt: routing, communication, active listening and leadership.

PhD, Riccardo Pignari "Object motion sensitivity", Universita' di Torino, PhD student, Collaboration with Prof. Gianvito Urgese
PhD, Caterina Caccavella "Neuromorphic vision for robotic applications", Zurich University of Applied Sciences (ZHAW), PhD student, Collaboration with Prof. Yulia Sandamirskaya
PhD, Akwasi Akwaboah "Event-driven saliency-based attention for active vision", Johns Hopkins University, PhD student, Collaboration with Prof. Ralph Etienne-Cummings and Ernst Niebur
PhD, Pouya Abdollahzadeh "Event-driven visuotactile schema for iCub, the humanoid robot", University of Genoa, PhD student, Co-supervision with Dr. Chiara Bartolozzi
MTs, Lioba Schürmann "Event-driven visual model for a robotic sensory-motor paint brush on neuromorphic hardware", Institute of Neuroinformatics (INI) ETH Zurich, MT student, Co-supervision with Prof. Giacomo Indiveri
MTs, Priyadarshini Kannan "Event-driven proto-object saliency on Loihi", Elite Masters of Neuroengineering at Technical University of Munich, MT student, Collaboration with Intel Labs
MTs, Arianna Gardella "Segregation of object and background motion in the retina", University of Genoa, MT student, Co-supervision with Dr. Chiara Bartolozzi
MTs, Simone Voto "Event-Driven Figure-Ground Organization", University of Genoa, MT student, Co-supervision with Dr. Chiara Bartolozzi
MTs, Luna Gava "Event-Driven Motion-In-Depth for Low Latency Control of the Humanoid Robot iCub", University of Genoa, MT student, Co-supervision with Dr. Chiara Bartolozzi
MTs, Ella Janotte "Biological Plausibility of the Spiking Elementary Motion Detector Model", Bielefeld University, MT student, Co-supervision with Prof. Elisabetta Chicca
MTs, Suman Ghosh "Event-driven bio-inspired online depth estimation for scene exploration on the iCub", European Master on Advanced Robotics, MT student, Co-supervision with Prof. Fabio Solari

BRAINS
& MACHINES

Co-Founder & Co-Creator Brains&Machines Podcast

2023-NOW; A podcast about **neuromorphic engineering** and biologically-inspired technology, in collaboration with Prof. & Journalist Sunny Bains, **University College London** and Prof. Ralph Etienne Cummings, **Johns Hopkins University**. Sponsored by **EE Times | Electronic Engineering Times**.
Link: `https://brainsandmachines.net/`

Co-Founder & Co-Creator Sottosoglia Podcast

2023-NOW; A podcast about "The person behind the scientist", in collaboration with Dr. & Fabrizio Ottati, **NXP Semiconductors**. Sponsored by **Open Neuromorphic**.
Link: `https://www.youtube.com/@Sottosoglia/videos`

Attended Schools & Conferences (Selected)

(2025) **Awareness, adoption, and directions of neuromorphic technologies, STANCE**, Fraunhofer-Institut für Integrierte Schaltungen IIS Nuremberg,Germany
(2025) **Embodied Active Vision for robotics Embodied Agents in Contemporary Visual Art**, Berlin, Germany
(2024) **European Conference on Computer Vision (ECCV)**, Milan, Italy
(2023) **Living Machines**, International Conference in Biomimetic and Biohybrid systems, Genoa, Italy
(2022) **NeuTouch**, International School on Technologies for Touch, Arenzano, Italy
(2022, 2019) **CapoCaccia Neuromorphic Workshops**, CapoCaccia Workshops toward Neuromorphic Intelligence, Alghero, Italy
(2022) **Neuro-Inspired Computational Elements (NICE)** Neuromorphic Workshop, Online
(2021) **IEEE Women in Engineering**, University of Genoa, Italy
(2020) **Neuromatch Academy**, NMA, Online
(2019) **Machine Learning Crash Course**, University of Genoa, Italy
(2019) **Summer School in Computational and Theoretical Models in Neuroscience** (ConTaMiNEURO), Venice, Italy

Personal Statement

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use the data provided in this CV.

Publications List

Last Author - International peer-reviewed journals

- Event-driven nearshore and shoreline coastline detection on SpiNNaker neuromorphic hardware
  Neuromorphic Computing and Engineering IOP science
  DOI:10.1088/2634-4386/ad76d5

First Author / First Co-Author – International Peer-Reviewed Journals

- Wandering around: A bioinspired approach to visual attention through object motion sensitivity
  Rising Stars 2025 Collection – Neuromorphic Computing and Engineering, IOP Science
  DOI: 10.1088/2634-4386/addc90
- A neuromorphic electronic artist for robotic painting
  Scientific Reports
  DOI: 10.1038/s41598-025-92081-x
- Event-Driven Figure-Ground Organisation model for the humanoid robot iCub
  Nature Communications
  Featured as Editors' Highlights in Applied Physics and Mathematics
  DOI: 10.21203/rs.3.rs-3897126/v1
- Event-driven bio-inspired attentive system for iCub humanoid robot on SpiNNaker
  Neuromorphic Computing and Engineering, IOP Science
  DOI: 10.1088/2634-4386/ac6b502022
- Event-Based Eccentric Motion Detection Exploiting Time Difference Encoding
  Frontiers in Neuroscience
  DOI: 10.3389/fnins.2020.00451
- Event-driven Proto-object based saliency in 3D space to attract a robot's attention
  Scientific Reports
  DOI: 10.1038/s41598-022-11723-6

Second Author – International Peer-Reviewed Conferences

- Proto-object based saliency for event-driven cameras
  IEEE IROS
  DOI: 10.1109/IROS40897.2019.8967943

First Author – Abstract

- Bioinspired intelligent visual attention system for the humanoid robot iCub exploring event-driven sensing and neuromorphic hardware
  DOI: 10.1136/bmjoo-2024-WVUK.10