

GiuliaD'Angelo

Contacts

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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**.

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.

Work Experience

2025 - NOW	Assistant Professor	Czech Technical University (Prague, Czechia)
	Neuroinspired Perception and Cognition Group. Neuromorphic sensing and computing for robotic applications. NPC Group Website	
2024 - 2026	Marie Skłodowska-Curie Postdoctoral Fellow	Czech Technical University (Prague, Czechia)
	Embodied Active Vision - EveNt DrivEn Active Vision for Object peRception (EN-DEAVOR) - 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 management	
	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.	

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

Projects' Demos [Youtube link](#)

Technology Transfer - R&D & Project management

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.

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	

Competitive Grants & Awards

2025	GAČR Standard Grant	Czech Science Foundation (Grantová agentura České republiky)
	Neuromorphic active vision for embodied object perception (PIONEER)	
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 Grant	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

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 préjugés (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

2025	Organising committee	Neuromorphic Computing for Development and Learning Workshop (NCDL) International Conference on Development and Learning IEEE (ICDL) Prague, Czech Republic
2025	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 IC DL 2025 International Conference on Development and Learning Prague, Czech Republic
2025,2024	(Group Leader - Co-organiser	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

Seminars & Lectures

2023 - NOW	Event Based Revolution for Robotic Perception	Czech Technical University Prague, Czech Republic
2024 - NOW	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

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.

Invited talks

- 2025 **Neuromorphic active vision**
Annual International Conference on Neural Engineering
San Diego, California
- 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, Copenhagen, Denmark



**BRAINS
& MACHINES**



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.

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>

Academic Supervision

2019 - NOW

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

External Examiner

BTs, Oszkár Urbán "Testing theory of visually driven schizophrenia using computational model", Charles University, Prague, Czechia

PhD, Maria Vaz de Salvador "A Study of Spiking Diffusion Models", Faculty of Engineering, University of Porto, Porto, Portugal

Supervision

PhD, Vojtech Vrba "Event-based drones frequency estimation", Czech Technical University in Prague, PhD student, Co-supervision with Prof. Martin Saska

PhD, Sarka Liskova "Active visual exploration for object perception through sensorimotor contingencies", Czech Technical University in Prague, PhD student, Co-supervision with Prof. Matej Hoffmann

PhD, Mazdak Fathai "Spiking neural networks for visual attention applications in robotics", University of Lille, PhD student, Co-supervision with Prof. Pierre Boulet

PhD, Riccardo Pignari "Object motion sensitivity", Università 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, Lukáš Bartůněk "Event-driven eye tracking and eye-blinking", Czech Technical University in Prague, MT student

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

BTs, Olha Vedmedenko "Neuromorphic object recognition through microsaccadic motion", Czech Technical University in Prague, BT student

BTs, Rayane Rocha "Language guided visual attention - neuromorphic keyword spotting", Czech Technical University in Prague, BT student - winner ROBOPROX challenge, Co-supervision with Prof. Karla Stepanova

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

(2025,2024) **Telluride Neuromorphic Engineering Workshop**, Colorado, US

(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

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

- A Benchmarking Framework for Embodied Neuromorphic Agents
(PEER REVIEW) Nature Machine Intelligence
- 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