

Simona Gandah

CONTACT INFORMATIONS

Email: simona.gandah@santannapisa.it

OBJECTIVE

Passionate and hardworking. I am committed to become a specialist in medical robotics, research and development of medical devices. I like international and stimulating environments to grow not only professionally.

EXPERIENCE

Pontedera, Italy
Oct 2022 - Present

PhD Candidate

The Biorobotics Institute of Scuola Superiore Sant'Anna

Industrial PhD scholarship funded by MEDICA s.p.a

Main activities:

- Design and characterization of intraluminal medical devices and soft-sensing technologies
- Signal processing and data analysis
- Development of IoT applications, collaboration in the EU-H2020 project *"ODIN: Leveraging AI based technology to transform the future of health care delivery in Leading Hospitals in Europe "*

Main activities:

- Firmware development of IoT devices and integration of cloud connected software architectures
- Electronic design of custom PCBs
- Tests and validation of ROS-based mobile robot navigation in Hospital settings
- Experimental validation of robotic platforms

Reviewe
June 2024- Present

Selected member of IEEE RAS Young Reviewers Program (YRP)
Scientific Reviewer in IEEE Transactions in Instrumentations and Measurements (TIM)

Pontedera, Italy
Feb 2022 - Sep 2022

Research Scholarship

Scuola Superiore Sant'Anna

Main activities:

- Design and characterization of high-resolution catheters for esophageal manometry (DHRY project in collaboration with MEDICA s.p.a)
- Firmware development for IoT devices (ODIN: Leveraging AI based technology to transform the future of health care delivery in Leading Hospitals in Europe - EU-H2020 project)

Pontedera, Italy
Oct 2020 - Mar 2021

Trainship - Lab Training

Scuola Superiore Sant'Anna

Main activities:

- learning Robot Operating System (ROS) on da Vinci Research Kit (dVRK)
- development of sensorized device (wristband) for the robot tool to integrate it into a sensorized manikin for surgical training
- creation of a simple graphic overlay for visual feedback

Skills acquired:

- ROS Machine learning
- Open cv
- da Vinci Research Kit (dVRK configuration)



Bressanone, Italy
Sep 2019 - Sep 2019

Attendance at the XL Annual School of Bioengineering " Biofabrication: an integrated bioengineering approach for the automated fabrication of biological structure for clinical and research applications"

Gruppo Nazionale di Bioingegneria

Amman, Jordan
Sep 2018 - Sep 2020

Vice-president, Co-founder
Exemplary Environmental Association

Main activities:

- activism and crowdfunding for an NGO in the field of environment and cultural heritage protection
- public relations with local partners
- collaboration in the submission of a project proposal for the EU joint program "Partnership for Research and Innovation in the Mediterranean Area (PRIMA) ". The consortium was made by seven partners from different countries in the Mediterranean area

Bologna, Italy
Sep 2018 - Oct 2018

Trainship - Research trainee
IRCCS Istituto Ortopedico Rizzoli

Main activities:

- mechanical characterization of human meniscal tissue through experimental tests of confined compression and mapping of the mechanical properties.
- literature research for scientific review about meniscal tissue

Skills acquired:

- expertise in the experimental protocol for indentation and confined compression on human meniscal tissue
- expertise in the safety and setup of experimental tests in the Medical Technologies Lab

EDUCATION

Oxford, UK
July 2024

Oxford Machine Learning Summer school 2024
University of Oxford and AI for Global Goals

Pisa, Italy
*October 2022-
Present*

PhD in Biorobotics
The Biorobotics Institute of Scuola Superiore Sant'Anna

Pisa, Italy
Sep 2019 - Dec 2021

Master of Science in Bionics Engineering
Scuola Superiore Sant'Anna, University of Pisa

Master program jointly provided by Sant'Anna School of Advanced Studies and University of Pisa
Curriculum: Biorobotics

Thesis: " Development of a novel capacitive-based catheter for urethral pressure profilometry" at the Biorobotics Institute (Pontedera, Italy)

Final score: 110/110

Pisa, Italy
Jun 2021 - Jun 2021

Seasonal School
Scuola Superiore Sant'Anna

Summer School in ARTIFICIAL INTELLIGENCE AND ROBOTICS IN EXTENDED REALITY (AIRONE) provided by the Mechanical Intelligence Institute (San Giuliano Terme, Italy), 44 hours (4 ECTS).

Palermo, Italy
Sep 2016 - Oct 2019

Bachelor degree in Biomedical Engineering
Università degli Studi di Palermo

Curriculum " Diagnostic Technologies"

Final project: "Correlation analysis in implanted subcortical electrodes during epileptic seizures"

Final score: 109/110

Amman, Jordan
Jun 2014 - Aug 2014

Arabic for Speaker of Other Languages (ASOL):
University of Jordan

Summer program at the Language Center of the University of Jordan for speakers of other languages.
Language certification with the final score: A
Activities: linguistic tutor for a student studying the Italian language

Palermo, Italy
2011 - 2016

Maturità Scientifica
Liceo Scientifico Statale S. Cannizzaro

Final score: 100/100

LANGUAGES

Italian
English
French
Arabic

Native
Advanced. FIRST Cambridge Certification (level B2)
Intermediate. DELF Certification (level B1)
Intermediate. ASOL (level B1)

ACADEMIC PROJECTS

Two-state amplitude control of 2 DoF Ottobock artificial hand (Jan 2021- Feb 2021)

Using C language and PIC microprocessor kit, the opening and closing of an Ottobock artificial hand were programmed and controlled through the implementation of a finite state machine for direct control. Academic project for the Artificial Limb's course

Design of an EMG analog front-end for signal acquisition: (May 2020 - Jun 2020)

design of an analog front-end of an electromyography acquisition system for the control of a robotic limb. The project was developed for the Electronics for Bionics Engineering course.

Izhikevich Neural Model-Based Real-Time Shape Recognizer:

(Dec 2019- Feb 2020)

A real-time neural decoder was implemented with non-adaptive, regular spiking of the Izhikevich Model for recognizing the shapes in real-time. Neural features used are based on the working principle of the calcarine sulcus in the brain's occipital lobe for the encoding and decoding phase of the decision tree algorithm. The Academic Project has been completed for the Neuromorphic Engineering course.

ACHIEVEMENTS

- Winner of the admission competition for the Bionics Engineering program, jointly offered by the University of Pisa and The Biorobotics Institute (Sant'Anna School of Advanced Studies), 30 places.
- First place at the school competition "Philosophy Olympics", Liceo S. Cannizzaro (Palermo, Jan 2016)
- First place at the regional competition "Philosophy Olympics" organized by Società Filosofica Italiana (Messina, Feb 2016) and fourth place at the national competition (Rome, May 2016)
- First place at the Karate National Championship - Federazione Italiana Arti Marziali (Rimini, Apr 2014)

PUBLICATIONS

- **S. Gandah et al.**, "An Integrated Sensorized Platform for Environmental Monitoring in Healthcare," in IEEE Sensors Letters, vol. 7, no. 9, pp. 1-4, Sept. 2023, Art no. 5502204, doi: 10.1109/LENS.2023.3301836.
- "Prototyping a sensorized tool wristband for objective skill assessment and feedback during training in minimally invasive surgery". A. Mariani, M. Conti*, **S. Gandah***, C. Galli de Paratesi* and A. Menciassi- Proceedings of 2021 International Symposium on Medical Robotics (ISMR) - IEEE Robotics and Automation Society. DOI: 10.1109/ISMR48346.2021.9661567

TECHNICAL SKILLS AND COMPETENCES

Basic knowledge of programming languages: Python, Labview Real-Time, LabView FPGA

Advanced knowledge of computational models: Machine learning, Neural Networks

Advanced knowledge of programming languages: C++, Matlab, Arduino, Particle Argon, LabVIEW

Good knowledge of softwares: SolidWorks, AutoCAD, COMSOL Multiphysics, LTSpice, EasyEDA

Good knowledge of operating systems: Microsoft, Linux, ROS, YARP

PERSONAL SKILLS

- Good organizational skills
 - Good attitude for team working
 - High attitude to problem-solving
 - Attitude to work for achieving a goal
 - Curiosity
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