Curriculum Vitae

Emanuele Gruppioni

Personal information

Date of birth	August 6, 1975
Birth place	Bologna (Italy)
Nationality	Italian
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IEEE	Member n. 93818358

Education

Date	March 13, 2020
Degree	PhD in Bioengineering e Bioscience
Title	"Dalla poliarticolarità alla sovrarticolarità di protesi e manipolatori robotici" "From polyarticularity to superarticularity of prostheses and robotic manipulators"
Supervisor	Eugenio Guglielmelli, Full Professor of Bioengineering
Institution	University Campus Bio-Medico of Rome (Italy)
Period	October 2011 - November 2014
Degree	C.P.O. (Certified Prosthetist/Orthotist)
Institution	University of Bologna (Italy)
Period	September 1994 - February 2006
Degree	Master of Electronic Engineering with Biomedical Specialization
Institution	University of Bologna (Italy)

Employment history

Period	September 2019 - now
Institution	Centro Protesi INAIL (Bologna, Italy) - Research and Training Area
Job	Technical Director of the Research and Training Area
Period	March 2017 - August 2019
Institution	Centro Protesi INAIL (Bologna, Italy) - Research and Training Area
Job	Research Area Manager
Period	September 2007 - February 2017
Institution	Centro Protesi INAIL (Bologna, Italy) - Research and Training Area
Job	Technical employee. Main activities: – Software development for Home Automation – Design of electronic medical devices for the control of upper limb prostheses – Design of test benches for the characterization of prosthetic joints – Mechanical design of devices and equipment for the production Area – Development of machine learning algorithm for human-machine interaction – Clinical studies
Period	March 2006 – September 2007
Institution	Centro Protesi INAIL (Bologna, Italy)
Job	Researcher
Period	December 2005 – February 2006
Institution	Spinner consortium
Job	Research scholarship in management and organization of SME
Period	August 2005 - October 2005
Institution	Tecnoservice.com S.r.l.
Job	Technical employee in informatics e networking

Teaching activities

Period	October 2015 – current
Institution	University of Bologna, degree course of Certified Prosthetist/Orthotist, School of Medicine and Surgery
Course	"Orthoses and orthopaedic aids III"
Position	Professor

Awards	
Year	2009
Award	Antonio D'Auria
Issued by	SIRI (Italian Association of Robotics and Automation)
Activity	ProMAS-6 - Modular upper-limb prosthetic active shoulder
Year	2018
Award	Innovation award
Issued by	ADI (Association for Industrial Design)
Activity	"Hannes" prosthetic hand
Year	2020
Award	Compasso D'Oro
Issued by	ADI (Association for Industrial Design)
Activity	"Hannes" prosthetic hand

Approved research projects	
	Program of research activities in the prosthetic-rehabilitation field 2019-2022
Funding	INAIL (Italian Institute for the Assurance against Work-related Injuries)
Title (1)	iHannes - Innovative techniques and technologies for the control of advanced upper limb prosthetic systems
Title (2)	HyperLEG - Innovative techniques and technologies for the control of advanced lower limb prosthetic systems
Title (3)	TwinMED - Expansion of the functionality of the Twin exoskeleton in the clinical / rehabilitative context
Title (4)	MioPRO - Patient-specific engineered muscles for the restoration of myoelectric channels and control of prostheses
Title (5)	MOTU++ - Robotic lower limb prosthesis with smart socket and bidirectional interface for lower limb amputees: customization through "human-in-the-loop optimization"
Title (6)	BioSUP - Bionic solutions for the treatment of subjects with excretory dysfunction of the urinary system
Title (7)	BioARM - Portable exoskeleton for the assistance of patients with brachial plexus injury in activities of daily life
Title (8)	WiFi-MyoHand - Implantable system optimized for interfacing with the peripheral nervous system and control of the upper limb prosthesis
Title (9)	ReGiveMeFive - Exploration of new frontiers in prosthetic surgery
Title (10)	3Daid - Low-cost hand prostheses and exoskeletal robotic aids
Title (11)	Rip@rto - Driving simulator to assist operators in assessing the user's driving skills and in choosing the aids to equip the car
Title (12)	proFIL - Multi-material filaments for the creation of high-performance customized prostheses with a focus on adaptive sport
Title (13)	ADJOINT - Additive manufacturing by binder jetting technology of sintered osseointegrated metal components
Title (14)	FESleg - Functional electrical stimulation in the treatment of people with spinal cord injuries: from pedaling on a trike to walking with an exoskeleton
Title (15)	OsteoCustom - Personalized processes of amputation treatment through osseointegration

Major scientific achievements

In his career, Dr. Gruppioni has mainly dealt with research with the aim of devising and conducting projects aimed at developing innovative technologies in the prosthetic-rehabilitation field with an horizon of technology transfer in the short-medium term.

He has always been motivated by wanting to create concrete results for the benefit of patients and, to this end, he set up all the projects he conducted according to the User Centered Design model, thus involving patients in all the design phases, from the initial focus groups to clinical trials on developed devices.

In this context, he has acquired great experience in all the design phases, from technological development in the mechanical, electronic and control fields, to the planning and conduct of numerous clinical studies, many in the role of principal investigator.

He deals with technology transfer in various forms, as the foreground of the research can be applied directly to the patients through to the technical structures of the Centro Protesi Inail or be transferred to external companies.

The RELIEF and HANNES projects of the 2016-2018 research program are an example of these types of transfers. The first, aimed at the development of an artificial endo-urethral sphincter with magnetic activation, was acquired by an innovative start-up financed by a multinational company in the urological sector. Regarding the second, aimed at developing an upper limb prosthetic system, dr. Gruppioni dealt directly with the technical specifications for identifying a company capable of industrializing the developed prototype.

During the research activities carried out since 2010 he has been involved in machine learning algorithms applied to prosthetic control to restore a more physiological control of prostheses by patients. The developed algorithms have been progressively applied in embedded systems (also for the HANNES prosthetic system) and are now integrated into the devices applied to the patients of the Centro Protesi Inail.