



**FABIO BABILONI**  
**CURRICULUM VITAE ET STUDIORUM**  
**ORCID: [0000-0002-4962-176X](https://orcid.org/0000-0002-4962-176X)**

Fabio Babiloni, born 1961, was graduated in Electronic Engineering magna cum laude in Rome, and get his PhD in Computational and Neural Engineering at the Helsinki University of Technology, Helsinki in the 2000.

**Abstract of the academic and scientific activities  
of prof. Fabio Babiloni**

*Academic activity.* Dr. Fabio Babiloni is full professor of Physiology at the Faculty of Medicine and he has the habilitation of full professor of Biomedical Engineering since 2014. He teaches “Physiology” at the students of the Medicine courses, “Industrial Neuroscience” to the students of BioEngineering course, “Neuroeconomy and neuromarketing” to the students of Psychology course and “Bioengineering” to the students of Biotechnology course. He supervised the master thesis of more than **300** (three hundred) students during the years 1990-2022. He supervised more than 30 PhD students from China, Turkey, USA and Hungary. From 2015 to 2018 was professor for innovation to the Hangzhou Dianzi university, College Computer Science and Technology, Hangzhou, where he won the prize for the Zeijhang province for innovation.

*Scientific activity.* To July 2024, Prof. Fabio Babiloni has published **317 papers** on peer-reviewed international scientific journals recognized on PUBMED, <https://pubmed.ncbi.nlm.nih.gov/?term=Babiloni+F.&sort=pubdate> with a total impact factor of more than **500**. His **H index is 88 (Google Scholar)**. <https://scholar.google.it/citations?user=WMuYsqcAAAAJ&hl=it> Prof. Babiloni is in the list of the major cited living Italian scientists in any field of knowledge. Since three years in a row prof. Fabio Babiloni **is also in the best 2% of the world scientists in neuroscience and biomedical engineering according to the ranking list published in 2021 PlosOne, 2022 by Springer Verlag, 2023 Stanford university.**

*Editorial and international activity.* Prof. Fabio Babiloni was Associate Editor of several international scientific journals: 1) IEEE Trans. On Neural System and Rehab. Engng; 2) IEEE Trans. On Biomedical Engineering, 3) IEEE Reviews in Biomedical engineering 4) Clinical Neurophysiology and others.

Prof. Fabio Babiloni has been president of the International Society of Non Invasive Functional Source Imaging and of the International Society of Bioelectromagnetism. He was chair of IEEE Technical committee for BioSignal Processing from 2012-2016, and member of IEEE TC in Neural Engineering and Human Machine Interaction. Prof. Babiloni was the chairman of the NeuroMath Action including scientists from 25 countries in EU. He was in the AdCom of IEEE-EMBS since 2013.

He is reviewer for international funding agencies, including European Union (EU) Academy of Finland, National Science Foundation (USA), European Space Agency (ESA), CNRS France, Austrian Fund of Research, Swiss Fund of Research, Cyprus Foundation, ANR France, Belgian FNRS

*Granting activity.* Prof. Fabio Babiloni has obtained a gross amount of money for different funds in the last decade of about **6,000,000** euros.

### ***Academic Activity***

<b>Years</b>	<b>Academic progression</b>
2019 – now	Full professor in Physiology at the University of Rome Sapienza
2014	Habilitation for full professorship in Biomedical Engineering and habilitation for full professorship in Physiology at the University of Rome Sapienza
2005-2014	Dr. Babiloni join as <i>Associate Professor of Human Physiology</i> to the Department of Physiology and Pharmacology, Univ. of Rome “La Sapienza”
2000-2004	Dr. Babiloni join as <i>Researcher of Human Physiology</i> to the Department of Physiology and Pharmacology, Univ. of Rome “La Sapienza”
1987-1999	Dr. Babiloni join as <i>Technical research officer</i> to the Institute of Physiology and Pharmacology, Univ. of Rome “La Sapienza”

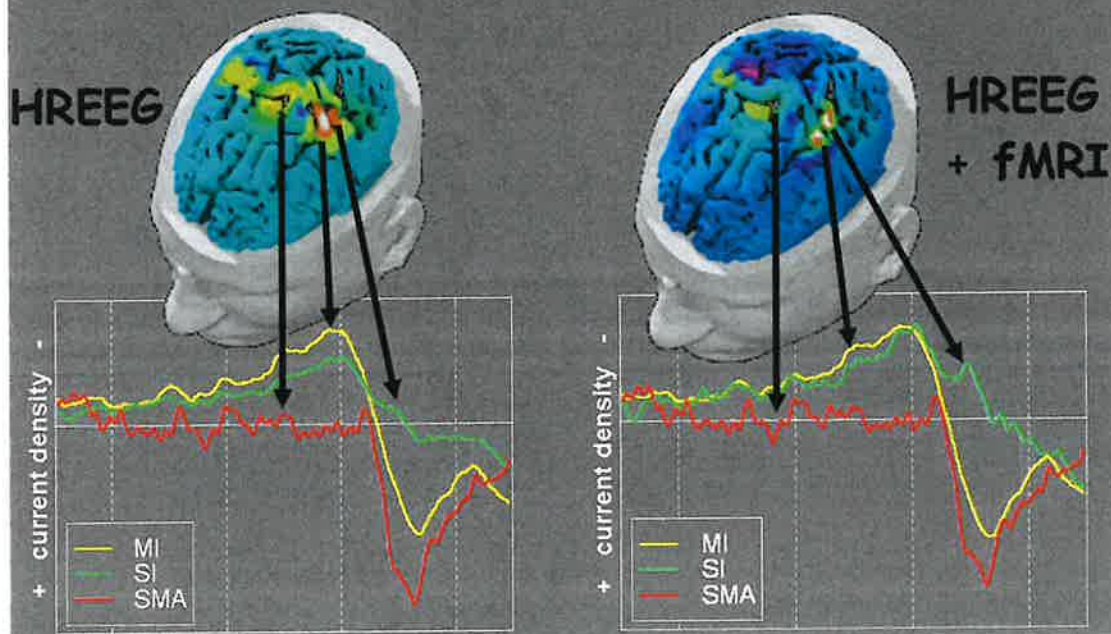
### ***Short summary of the scientific activity***

In the following, a short summary of the scientific activity of dr. Babiloni is proposed and the principal ideas within each line of research are briefly presented.

#### ***Multimodal integration of EEG, MEG and fMRI data (1998-Now)***

Since 1998 the interest of dr. Babiloni was also attracted by the study of possible methods for the multimodal integration of data from different brain imaging modalities. During the period of his PhD thesis at the Helsinki University of Technology, Finland dr. Babiloni proposed different formulations to fuse multimodal imaging data (MEG, EEG and fMRI) in a unique mathematical context. He made several contributions in the field, by using both simulations as well real data for the multimodal integration of EEG, MEG and fMRI. Dr. Babiloni proposed original methods for such multimodal integration and his algorithms on several papers published on high impact factor journals. The following figure shows the increment of spatial resolution with the multimodal integration of EEG and fMRI measurements. On the left side of the figure the estimation of the cortical activity only with the high resolution EEG data, while on the right there is the estimation of the cortical activity with the use of the data from fMRI recordings during the same type of movement already performed under the EEG scanner.

## Movement-related cortical dynamics



From Babiloni et al., *Magn Reson Imaging*. 2004 Dec;22(10):1471-6.

### ***Estimation of cortical connectivity from high resolution EEG and fMRI measures (2003-Now)***

Since 2003 the interest of dr. Babiloni was also attracted by the study of possible methods for the estimation of cortical connectivity, i.e. the estimation of how the single cortical areas can be functionally linked one to the others during particular time period of a task. Dr. Babiloni investigates this issue with the use of several methods, some of them only used in the fMRI field and now adapted by dr. Babiloni also in the field of EEG and MEG. Results of this line of scientific research were published during the years 2003-2005 on prestigious high impact factor journals, being the first example in the literature of the estimation of cortical connectivity by using multimodal integration of EEG and fMRI measurements. The figure shows the possible representation of the cortical connectivity estimates for a single finger movement. On the left the arrows depict the flow of information between the Brodmann areas in which the modeled cortex has been segmented, while on the right there is a representation of the total behavior of a single region of interest in terms of outflow of information from a region of interest toward all the others (blue colors) or the behavior of a particular region of interest as a target of the activity from all the other region of interest (red colors).



***Activity as team leader (1995-Now)***

During the last ten years, dr. Babiloni has led the scientific research performed at the laboratory of high resolution EEG at the Department of Human Physiology and Pharmacology of the University of Rome “La Sapienza”. In this laboratory actually work 3 PhD students, and 10 senior researchers. To now, dr. Babiloni has supervised more than 250 master thesis in electronic engineering since 1989, in cooperation with the Department of Informatic at the Engineering Faculty at the University of Rome “La Sapienza”. He is actually scientific advisor at the laboratory of high resolution EEG of the IRCCS “Fondazione Santa Lucia”, and since 2018 for the Hangzhou Dianzi University in China, where he acts as professor in Innovation at the Computer Science and Technology College.

***Activity as researcher in neuromarketing and neuroeconomy (2006-Now)***

Prof. Babiloni has generated the first university textbook on neuroeconomy and neuromarketing in Italy, and was the person with the highest number of scientific publications on neuromarketing in Italy on scientific, peer-review journals. He was also the funder of the company BrainSigns srl that wons several Italian prizes for the best company aimed to translate neuroscience in to the industrial and company environment.

***Grants received since 2009***

<b>Years</b>	<b>Funding agency</b>	<b>Title of Research</b>	<b>Role</b>
2021-2024	ERASMUS+	WECOLLAB	<b>Co-PI</b>
2021-2024	ERASMUS+	SOULSS	<b>Co-PI</b>
2022-2024	EU – H2020	TRUSTY	<b>Co-PI</b>
2022-2024	EU – H2020	CODA	<b>Co-PI</b>
2021-2024	EU – H2020	FITDRIVE	<b>Co-PI</b>
2020-2022	EU – H2020	ARTIMATION	<b>Co-PI</b>
2019-2022	EU – H2020	SAFEMODE	<b>Co-PI</b>
2020-2022	EU – H2020	Mindtooth	<b>Co-PI</b>
2019-2021	EU – H2020	WorkingAge	<b>Co-PI</b>

2019-2021	EU – H2020	Hope	<b>Co-PI</b>
2017-2020	EU – H2020	Simusafe	<b>Co-PI</b>
2015-2018	EU – H2020	SmokeBrainFree	<b>Co-PI</b>
2016-2018	EU – H2020	STRESS	<b>Co-PI</b>
2016-2018	EU – H2020	MOTO	<b>Co-PI</b>
2013-2017	FP7- EUROCONTROL	NINA-Neurometric indicators for Air Traffic Controllers	<b>PI</b>
2014-2017	Minister of University	PRIN 2012 Project “Generation of a workload real time measurements for pilots”	<b>PI</b>
2013-2016	Minister of Foreign Affairs	Bilateral project between Italy and China on “Neural Predictors for stroke rehabilitation“	<b>PI</b>
2011-2013	Minister of Foreign Affairs	Bilateral project between Italy and Hungary on “Brain Computer Interfaces for domotic applications“	<b>PI</b>
2010-2013	University of Rome Sapienza	“Pilot’s errors”	<b>PI</b>
2011-2013	Filas	“Domotic and brain computer interface”	<b>Co-PI</b>
2010-2011	Filas-Tecnotiberis	“Domotic house controlled by EEG”	<b>PI</b>
2009-20012	National Institute of Health (USA)	“EEG hyperscannings”	<b>Co-PI</b>
2010-2011	Ministry of Defence	“BrainShield: Detecting pilot’s errors before they occur”	<b>PI</b>

### ***Didactic activity***

Since 2001 dr. Babiloni held the course of Human Physiology for the students of the School of Medicine for the Faculty of Medicine at the University of Rome “La Sapienza”. Since 1990 prof. Babiloni held seminars and part of the Bioengineering courses at the University of Rome “Sapienza” in the course regularly held by Prof. Serenella Salinari at the Faculty of Engineering

<b>Years</b>	<b>Didactic activity</b>
2014-Now	Dr. Babiloni teaches “Neuroeconomy and neuromarketing” at the Faculty of Psychology at the University of Rome Sapienza
2013-Now	Dr. Babiloni teaches “Industrial Neuroscience” at the Faculty of Engineering at the University of Rome Sapienza
2010-Now	Dr. Babiloni teaches “Clinical application of electronic bioengineering” at the students of the master degree in Biotechnology, at the Faculty of Medicine at the Univ. of Rome “La Sapienza”
2001-Now	Dr. Babiloni teaches Physiology at the students of the master degree of Medicine and Surgery, Faculty of Medicine at the Univ. of Rome “La Sapienza”
1995-Now	Dr. Babiloni acts as a tutor of PhD students at the Department of Human Physiology and Pharmacology Univ. of Rome “La Sapienza”
<b>1989-Now</b>	Dr. Babiloni supervise more than <b>200</b> master degree thesis of bioengineering produced in the laboratories of the Institute of Human Physiology of Rome under his supervision
<b>1989-Now</b>	Dr. Babiloni hold regular lectures at the BioEngineering courses at the faculty of Electronic Engineer of Rome “La Sapienza” and to the course of “Ingegneria clinica”

### ***Generation of books and support for the didactic***

Prof. Babiloni has generated four books for students attending course of Physiology at the Faculty of Medicine and Surgery of Rome as well as for students attending courses of Bioengineering.

<b>Years</b>	<b>Title</b>
2021	Babiloni et al. “Neurodesigns”, Sapienza
2017	Aricò, Borghini, Di Flumeri and Babiloni “Industrial Neuroscience in Aviation”, Springer International.
2013	Vecchiato, Cherubino, Trettel, Babiloni “Neuroelectrical Brain Imaging Tools for the Study of the Efficacy of TV Advertising Stimuli and their Application to Neuromarketing”, Springer International.
2010	Babiloni-Astolfi-Ferraina “Fisiologia”, Edises edizioni
2007	Babiloni, Meroni, Soranzo “Neuromarketing e processi decisionali”, Springer, Italy.

### ***Activity as Associate Editor of scientific international Journals***

Prof. Babiloni is actually Associate Editor of four international scientific journals in the field of neuroscience and bioengineering.

<b>Years</b>	<b>Society or Journal</b>	<b>Position</b>
2018-2022	International Journal of Bioelectromagnetism	<b>Editor in Chief</b>
2014-2021	IEEE Reviews on Biomedical Engineering	<b>Associate Editor</b>
2012-2023	IEEE Transaction on Biomedical Engineering	<b>Associate Editor</b>
2008-2009	Reviews of Functional Neuroprosthesis	<b>Associate Editor</b>
2006-2020	Journal of Computational Intelligence and Neuroscience	<b>Associate Editor</b>
2005-2023	IEEE Transactions on Neural and Rehabilitation Engineering	<b>Associate Editor</b>

2003-2017	International Journal of Bioelectromagnetism	Associate Editor
2003-2008	Clinical Neurophysiology (former EEG Journal)	Associate Editor

### ***Activity as reviewer of international Journals***

Dr. Fabio Babiloni is actually referee of several international Journals in the field of biomedicine and bioengineering, as well as consultant of a scientific publisher.

<b>Years</b>	<b>Activity as reviewer for scientific Journals</b>
2001-Now	<i>Brain, Experimental Brain Research, Brain Research, Neuroimage, Human Brain Mapping, Medical &amp; Biological Engineering &amp; Computing, Computer Methods and Programs in Biomedicine, Cognitive Brain Research, Physics and Engineering in Medicine, Frontiers in Human Neuroscience, Scientific Report, Annals of Neurology</i>
2000-Now	<i>IEEE Transactions on Rehabilitation Engineering, Annals of Biomedical Engineering, Clinical Neurophysiology</i>
1996-Now	<i>IEEE Transactions on Biomedical Engineering</i>

### ***Activity as reviewer as reviewer for the European Community and international funding societies***

<b>Years</b>	<b>Funding agency</b>	<b>Type of Project</b>
2010-Now	Cyprus Agency for Research	<i>Research Project</i>
2010-Now	Belgium Agency for Research	<i>Research Project</i>
2008-Now	European Space Agency	<i>Research Project</i>
2007-Now	Switzerland Research Funds	<i>Research Project</i>
2007-Now	ANR, CNRS France	<i>Research Project</i>
2006-Now	National Science Foundation	<i>Research Project</i>
2005-Now	Austrian Science Fund	<i>National Support for Research</i>
2005-Now	Academy of Finland	<i>Center of Excellence, post-doc grants</i>
2004-Now	European Union	<i>NEST, STREP, IP, ERC, ITN, FET, MSCA, H2020, HorizonEurope</i>

### ***Activity in editorial boards and societies***

Dr. Babiloni is also member of several national societies, such as the Italian Society of Physiology and the Italian society of the clinical Neurophysiology.

<b>Years</b>	<b>Society or Journal</b>	<b>Position</b>
2012-2018	IEEE EMBS	<b>Advisory Committee Member</b>
2012-2016	IEEE EMBS	<b>President of Technical Committee of Biomedical Signal Processing</b>
2009-2012	International Society of Non Invasive Functional Source Imaging	<b>President</b>





## Curriculum vitae

### Palermo Eduardo

ORCID ID: 0000-0002-3213-8261

Bibliometria Scopus: 77 Documenti, 1639 Citazioni, h-index=20.

#### • TITOLI

- Febbraio 2014 PhD in Ingegneria della Produzione Industriale (ING/IND-12), Dipartimento di Ingegneria Meccanica e Aerospaziale (DIMA), Sapienza Università di Roma.
- Marzo 2009 Laureato Magistrale con lode in Ingegneria Biomedica, Sapienza Università di Roma.

#### • POSIZIONE ATTUALE

- Dal 2 Maggio 2022 RTD-B presso:  
DIMA – Sapienza Università di Roma
- 2020 - 2022 Assegnista di Ricerca Fellowship BE\_FOR\_ERC presso:  
DIMA – Sapienza Università di Roma.

#### • POSIZIONE PRECEDENTE

- 2015-2020 RTD-A presso:  
DIMA – Sapienza Università di Roma
- 2014 - 2015 Postdoc presso:  
Department of Mechanical and Aerospace Engineering, New York University,  
Tandon School of Engineering, NY, USA.

#### • FELLOWSHIPS

- 2009 - 2010 Assegnista di ricerca presso:  
DIMA - Sapienza Università di Roma.

#### • ABILITAZIONI SCIENTIFICHE NAZIONALI

- Dal Maggio 2021 Abilitato Professore di Prima Fascia nel settore ING/IND-12
- Dal Marzo 2018 Abilitato Professore di Seconda Fascia nel settore ING/IND-12

#### • GESTIONE DI PROGETTI DI RICERCA

- Dicembre 2022 Vincitore come Local-PI del Bando BRIC 2022\_46 dell'INAIL (ca. 300 k€) dal titolo "GURU: Sviluppo di un sistema multisensoriale a realtà mista per l'addestramento dinamico di lavoratori in ambienti ad alto rischio". Budget per DIMA: ca. 100k€.
- Dicembre 2022 Vincitore come PI del Bando per Progetto di Ricerca Medio di Ateneo 2022 (12k€) dal titolo: "A 3-DoF wearable ankle exoskeleton: development and validation on patients with central neural damage."
- 2021 - 2022 Vincitore come Local PI del Bando FISR 2020 COVID dal titolo: "COVIDMETER – Sistema termografico basato su Intelligenza Artificiale per l'individuazione di soggetti sospetti COVID-19 in aree ad elevato afflusso". Budget per DIMA ca. 27 k€.
- 2021 - 2022 Vincitore come Local PI dell' EU – Eurobench Sub-Grant (54 k€ ca.) dal titolo: "TO RANK - Testing and Optimization of a Robotic ANKle". Budget per DIMA ca. 10 k€.
- 2020 - 2021 Vincitore Bando BE\_FOR\_ERC di Sapienza (50 k€) dal titolo WAINOT. Progetto di 12 mesi.
- 2019 - 2022 Vincitore come PI del Bando BRIC 2019\_37 dell'INAIL (ca. 300 k€) dal titolo "SIDE-Sviluppo di un esoscheletro per dinamica simulata e interfaccia aptica". Progetto di 24 mesi che prevede la distribuzione dei fondi tra 4 Unità (SAPIENZA, TUSCIA, UNICUSANO, FEDERICO II). Budget per DIMA: ca. 100k€.
- 2016 - 2020 Vincitore del Bando per Progetto di Ricerca Medio di Ateneo 2016 (9k€).
- 2016 - 2017 Responsabilità di Unità del progetto FP7 MD-PAEDIGREE (ca. 400k€), dalla scomparsa del PI Paolo Cappa (Agosto 2016) alla chiusura del progetto (Maggio 2017). Progetto chiuso e rendicontato dal candidato con valutazione ottima dalla Commissione Europea.

- **INSEGNAMENTI UNIVERSITARI**
  - 2016 – 2020 Titolare del corso di Biomeccanica (9 Cfu) - Sapienza Università di Roma.
  - 2015 – 2020 Titolare del corso in inglese di Measurements for Mechanical Systems and Industry (9 Cfu) Sapienza Università di Roma.
  - 2016 – 2020 Titolare del corso di Laboratorio di Biomeccanica per Ingegneria Meccanica (3 Cfu) – Sapienza Università di Roma.
- **IMPEGNI ISTITUZIONALI**
  - 2016 - Oggi Membro del Collegio dei Docenti di Dottorato in Ingegneria Industriale e Gestionale, DIMA - Sapienza Università di Roma.
  - 2016 - Oggi Responsabile dei Programmi di Double Degree in Ingegneria Meccanica con NYU Tandon School of Engineering e Georgia Institute of Technology.
  - 2019 - Oggi Membro della Commissione Didattica del CdA di Ingegneria Meccanica, Sapienza Università di Roma.
  - 2019 - Oggi Membro della Commissione Internazionalizzazione del CdA di Ingegneria Meccanica, Sapienza Università di Roma.
- **MEMBERSHIP DI COMUNITÀ SCIENTIFICHE**
  - 2018 - Oggi Chair di Commissione Tecnica per IMU nel “*IEEE Sensor Council, Italy Chapter*”
  - 2018 - Oggi Membro IEEE, Membro IEEE IMS.
- **ORGANIZZAZIONE DI CONVEGNI SCIENTIFICI**
  - 2024 Technical Program Chair per IEEE International Symposium on Measurements for Medical Application (MeMeA) 2024, Eindhoven, The Netherlands.
  - 2024 Special Session Chair per International Workshop on Metrology for Industry 4.0 and IoT (Metroind) 2024, Florence, Italy.
  - 2020 Tutorial Chair per IEEE International International Workshop on Metrology for Industry 4.0 and IoT (Metroind) 2020, Rome, Italy.
  - 2019 Session Chair per IEEE International Workshop on Metrology for Industry 4.0 and IoT (Metroind) 2019, Naples, Italy.
  - 2018 Session Chair per IEEE International Symposium on Measurements for Medical Application (MeMeA) 2018, Rome, Italy.
- **BREVETTI**
  - 2023 Domanda per Brevetto italiano n. 102023000023538: “Esoscheletro per interfaccia aptica con ambiente di realtà virtuale e /oaugmentata”
  - 2019 Brevetto italiano n. 102019000003657: “Un dispositivo sensore tattile, o pelle artificiale basata su FBG per applicazioni in robotica collaborativa”
  - 2018 Brevetto italiano n. 102017000062668: “Procedimento e dispositivo per rilevare condizioni di marcia durante la marcia di un atleta”
- **AWARDS**
  - 2014 Premio migliore studente di Dottorato per i primi 30 anni della scuola di Ingegneria Industriale e Gestionale.
- **SEMINARI SU INVITO**
  - 2023 Politecnico di Bari. Webinar su: “Utilizzo di sensori inerziali in Biomeccanica”
  - 2022 Politecnico di Milano. Webinar su: “IMUs: Use and applications in Biomechanics.”
  - 2019 Summer School of Information Engineering, Bressanone (BZ). Seminario su: “A Machine Learning approach for analyzing human motion activities using data from wearable sensors.”
  - 2018 Berlin School of Movement Science (BSMS) 2018. Seminario su: “Muscle synergies in neurodegenerative diseases and rehabilitation.”
- **PUBBLICAZIONI**

Lista completa: <http://orcid.org/0000-0002-3213-8261>



## PIETRO ARICÒ

### Curriculum Vitae

#### Table of contents

Part I –Scientific Achievements.....	1
Part II – General Information.....	1
Part III – Education.....	2
Part IV – Appointments.....	2
IV A – Academic Appointments.....	2
IV B – Other Appointments.....	3
Part V – Research Activities.....	3
Part VI – Teaching experience.....	5
VI A – Courses.....	5
VI B – Supervision of graduate and doctoral thesis.....	6
Part VII – Society memberships, Awards and Honors.....	7
Part VIII – Funding Information [grants as PI-principal investigator or I-investigator].....	7
Part IX – Responsibility for other scientific international and national research projects selected for funding based on competitive calls that provide peer review [Project Manager – <i>Responsible of all the scientific activities of the project</i> ; Unit Manager – <i>Responsible of scientific activities of the own unit</i> ; Team Member – <i>Involvement in specific scientific activities within the Unit</i> ].....	8
Part X – Editorial and reviewing activity.....	10
Part XI – Organization or participation as a speaker at scientific conferences.....	11
Part XII – National and international research collaborations.....	14

#### **Part I –Scientific Achievements**

**Scopus:** <https://www.scopus.com/authid/detail.uri?authorId=6506515949>

[*H-index: 33; Documents: 115; Citations: 2914*]

**Google Scholar:** <https://scholar.google.com/citations?user=oMJi0ZIAAAAJ&hl=en>

[*H-index: 37; Documents: 163; Citations: 4149*]

**ORCID:** <https://orcid.org/0000-0002-3831-6620>

#### **Part II – General Information**

Full Name	Pietro Aricò
Date of Birth	27/03/1985
Place of Birth	Messina, Italy
Citizenship	Italian
Permanent Address	Viale Giustiniano Imperatore, 274, 00145, Rome, Italy
Mobile Phone Number	+39 3292973269
E-mail	<a href="mailto:pietro.arico@uniroma1.it">pietro.arico@uniroma1.it</a>
Spoken Languages	Italian, English

**Part III – Education**

Type	Year	Institution	Notes
PhD	2014	University of Bologna “Alma Mater Studiorum”	Bioengineering. Thesis title: <i>Mental states monitoring through passive brain-computer interface systems</i>
Master’s Degree	2010	University of Rome “La Sapienza”	Master’s Degree, Biomedical Engineering, degree mark: 110 (out of 110) /110. Thesis title: <i>Development and validation of a P300-based BCI in covert attention condition: GeoSpell</i>
Bachelor’s Degree	2007	University of Messina	Bachelor’s Degree, Electronic Engineering, degree mark: 110 (out of 110) cum laude/110. Thesis title: <i>Modelling and study of MRAM written by non-uniform spin polarized currents</i>
Licensure 01	2019	Italian Ministry of Education, Universities and Research (MIUR)	National Scientific Qualification as Associate Professor (art.16 of the law 30 December 2010, n.240) in Bioengineering (09/G2)
Licensure 02	2011	University of Rome “La Sapienza”	Licensed Professional Industrial Engineer

**Part IV – Appointments***IV A – Academic Appointments*

Start	End	Institution	Position
15/07/2022	Present	Dept of Computer, Control and Management Engineering, University of Rome “La Sapienza”, Italy	Professor (rtdB, Tenure Track)
01/02/2020	Present	Dept of Molecular Medicine, University of Rome “La Sapienza”, Italy	Subject Expert
01/02/2016	31/01/2020	Dept of Molecular Medicine, University of Rome “La Sapienza”, Italy	Postdoctoral researcher. <u>Assignment:</u> <i>Research in passive brain-computer interface systems/ processing and classification of biosignals.</i>
01/02/2014	31/01/2016	Dept of Physiology and Pharmacology, University of Rome “La Sapienza”	Postdoctoral researcher. <u>Assignment:</u> <i>Research in passive brain-computer interface systems/ processing and classification of</i>

04/06/2013	03/09/2013	International Institute of Neuroscience "SINAPSE", National University of Singapore (NUS)	<i>biosignals.</i> Research fellow. <u>Assignment:</u> <i>Development of a passive-BCI system for the online measurement of Mental Workload through classification of features coming from EEG.</i>
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#### IV B – Other Appointments

Start	End	Institution	Position
07/09/2015	Present	BrainSigns company	Chief Technology Officer of R&D department, Project Manager. <u>Assignment:</u> <i>Technology transfer of the research performed in BCI field, to generate services and products. Writing and management of international projects (i.e. SMEInstrument, EIC Accelerator, Fast Track to Innovation programs) at high Technology Readiness Level (TRL).</i>
16/04/2012	31/08/2012	TECNO.TIB.E.R.I.S (consorzio tecnologie tiburtino per l'eccellenza nella ricerca, l'innovazione e lo sviluppo) Consortium	Bioengineer consultant. <u>Assignment:</u> <i>Development of a framework for the classification of EEG signals recorded from healthy subjects or patients with motor disabilities (locked in people) with the aim to realize a Brain-Computer Interface system for communication and control, within the project MindHome</i>
01/11/2012	31/05/2014	ALFAMEG company	Bioengineer consultant. <u>Assignment:</u> <i>Development of assistive technology (hardware and software) for research labs.</i>
01/12/2010	31/01/2014	Neuroelectrical Imaging and BCI Laboratory (NEIlab) at the IRCCS Fondazione Santa Lucia of Rome	Bioengineer researcher. <u>Assignment:</u> <i>Research in Brain-Computer Interface field, with particular regard for communication and control, and for rehabilitation purposes.</i>

#### Part V – Research Activities

Keywords	Brief Description
Brain-Computer Interface	My research activity has always been focused on one of the most innovative and fascinating areas of bioengineering applied to neuroscience, the brain-computer interface (BCI), defined as "a system that measures Central nervous System (CNS) activity and converts it into artificial output that
Machine Learning	
Neuroscience	

Mental & Emotional states	<p><i>replaces, restores, enhances, supplements, or improves natural CNS output and thereby changes the ongoing interactions between the CNS and its external or internal environment, Wolpaw et al., 2012</i>". In this regard, I had the possibility to work with different types of BCI systems, by the involvement in many national and international projects (see sections VIII and XI), in particular (i) as assistive technology (i.e. communication and control), (ii) for rehabilitation purposes (i.e. motor imagery) and (iii) for "passive" monitoring of internal states of the user (i.e. workload, attention, stress, etc) while dealing with a task (i.e. driving a car or piloting an aircraft). My specific background as bioengineer, is focused on the (i) processing and features extraction of different kind of biosignals (i.e. electroencephalography-EEG, electrocardiography-ECG, photoplethysmography-PPG, Electro Dermal Activity-EDA, Electromyography-EMG, Electrooculography-EOG), and (ii) machine learning techniques able to employ such mentioned features to maximize BCI performances.</p>
Neurophysiological Signal processing (EEG, ECG, PPG, EDA, EMG, EOG)	<p><b>BCI for communication &amp; control:</b> At the beginning of my activity I worked with BCI systems for communication and control, for locked-in patients. In particular, it can be possible to decode some specific features extracted from the EEG signal of the subjects, and employ them as a communication and/or control channel. In this regard, I got great knowledge in processing EEG signals in time domain, extract and analyse Event Related Potentials (i.e. ERPs, P300 and N200 potentials). In this regard, I have developed an algorithm able to maximize the signal to noise ratio for an improved extraction of ERPs from the background EEG noise. At the same time, I had the possibility to deal with machine learning techniques (both linear and non linear) applied to such mentioned features, to be used to enhance BCI performances.</p>
	<p><b>BCI for rehabilitation:</b> The principle at the basis of this kind of BCI is that the system can be used to "reinforce" specific brain patterns of post-stroke patients, while performing simple tasks (e.g. grasping an object), and so fasten the rehabilitation phase. I have generated in this regard a hybrid BCI system that employ at the same time EEG and EMG signals, to maximize the reinforcement of physiological brain patterns, inhibiting the activation of pathological patterns. During this activity I got expertise in analysing frequency domain features of EEG signals.</p>
	<p><b>Passive BCI:</b> This kind of BCI is used to "passively" monitor mental and emotional states of the user, while dealing with specific operational tasks (e.g. driving a car or piloting an airplane). In particular, my activity was focused on the extraction and classification (by using machine learning techniques) of specific features, responsive to variations of actual mental states of the user. In this regard, I had the possibility to deal with the processing of different kind of biosignals, i.e. EEG, ECG, PPG, EDA, EOG, and to face with all the constraints of the "real-setting" that are often not taken into account by most of the work carried out in literature (laboratory-setting). In this framework I had patented an algorithm able to generate in real-time a measure of the mental workload experienced by the user, by using his/her EEG signals.</p>

**Part VI – Teaching experience***VIA – Courses*

Year	Institution	Lecture/Course
2022- Present	University of Rome “La Sapienza”	Professor and leading of the course: Biomedical data and signal processing II (“Biomedical Engineering” M.Sc.)
2022- Present	University of Rome “La Sapienza”	Professor and co-leading of the course: Biomedical data and signal analysis (“Medicine and Surgery” B.Sc.)
2022	University of Rome “La Sapienza”	Lecture within the 'ABRO 2022 Course on Advances in Bioengineering: Network Analysis for Health and Medicine', as part of the institutional training offer of the PhD in Automation, Bioengineering and Operations Research (ABRO), entitled: 'EEG-based Brain-Computer Interfaces: Toward a Daily Life Employment'.
2017 to 2020	University of Rome “La Sapienza”	Examination committee member within the courses:  <u>Bioingegneria elettronica ed applicazioni cliniche – Telemedicina e robotica</u> of “Biotecnologie Mediche” MSc program  <u>Neuroeconomia e neuromarketing</u> of “Psicologia della Comunicazione e del Marketing” MSc program, Sapienza University of Rome, Italy
2019	School of Sport CONI	Lecture (Formal teaching fellow) at the seminar “Leadership. Understanding, connecting and getting more”
2018	School of Sport CONI	Lecture (Formal teaching fellow) at the seminar “Neuroscience and sports: measuring the sporting performance of stress”
2013 - present	University of Rome “La Sapienza”	Lectures and tutoring activity within the courses:  <u>Human Robot Interaction (HRI)</u> of Elective in Artificial Intelligence MSc program (ING-INF/01)  <u>Bioingegneria elettronica ed applicazioni cliniche – Telemedicina e robotica</u> of “Biotecnologie Mediche” MSc program (BIO/09)  <u>Analisi dei Biosistemi Complessi</u> of “Biomedical Engineering” MSc program

		(ING-INF/06) AA2013/2014-2014/2015 <u>Neuroscienze Industriali</u> of “Biomedical Engineering” MSc program (ING-INF/06) AA2016/2017
2011 - present	University of Rome “La Sapienza”	Tutor/Co-Tutor of 1 bachelor, 8 master and 3 PhD theses (see next section for further details)

*VI B – Supervision of graduate and doctoral thesis*

Year	Title	Program	Role
2023 - present	EEG processing and classification for passive Brain-Computer Interface applications	PhD program in Automatic Control, Bioengineering and Operations Research (ABRO)	Tutor
2020 - 2024	Employment of neurophysiological measures to enhance training of professionals in a managerial context	PhD in Morphogenesis and Tissue Engineering, <i>University of Rome "La Sapienza"</i>	Co-Tutor
2016-2019	Analysis of the human perception during the vision of social communications	PhD in Morphogenesis and Tissue Engineering, <i>University of Rome "La Sapienza"</i>	Co-Tutor
2015-2018	Electroencephalography-based measures of human mental workload in operational environments for the development of Brain-Computer Interfaces passive	PhD in Morphogenesis and Tissue Engineering, <i>University of Rome "La Sapienza"</i>	Co-Tutor
2011-2024	24 bachelor and master theses on Brain-Computer Interfaces and biomedical signal processing, within the following programs	<u>Master's Degree</u> in Biomedical Engineering, <i>University of Rome "La Sapienza"</i> <u>Master's Degree</u> in Data Science, <i>University of Rome "La Sapienza"</i> <u>Master's Degree</u> in Medical Engineering, <i>University of Rome "Torvergata"</i> <u>Master's Degree</u> in Automatic Engineering and Automation Systems, <i>University of Rome "La Sapienza"</i> <u>Bachelor's Degree</u> in Clinical Engineering.	Tutor



University of Rome "La  
Sapienza"

### Part VII – Society memberships, Awards and Honors

Year	Title
2023 - present	Scientific Board Member of the Phd in automatic control, bioengineering and operations research, Sapienza University of Rome.
2021 - present	Marie Curie Alumni Association
2014 - present	National Group of Bioengineering (GNB)
2012 - present	Italian Association of Clinical Engineering (AIIC)
2014-2015	-IEEE Membership: from 01/03/2014 to 31/12/2015 -IEEE Young Professionals: from 01/01/2014 to 31/12/2015 -IEEE Engineering in Medicine and Biology Society: from 01/03/2015 to 31/12/2015
2024	AIIC Awards: Selection by the scientific committee to present the scientific work "mindtooth: Monitoring brain activity like a breeze" to the National Conference organized by the Italian Association of Clinical Engineering (AIIC), Rome, Italy.
2023	Maker Faire the European edition: Selection by the scientific committee to present product "Wearable EEG system to decode mental states in operational environments" to the Maker Faire, Rome 2023, Rome, Italy
2023	AIIC Awards: Selection by the scientific committee to present the scientific work "MINDTOOTH: EEG wearable system for real-time assessment of a patient's mental and emotional states in clinical settings" to the National Conference organized by the Italian Association of Clinical Engineering (AIIC), Florence, Italy.
2013	Finalist - Scientific Award "I Guidoniani" - Air Traffic Control Section for young researchers (medicine and science section, 2013), awarded by the Italian Association of Aeronautical and Space Medicine (AIMAS), for the work entitled "Brain-computer interface for online estimation of pilots' mental load".
2014	Award "Massimo Grattarola" (twelfth edition), Assigned by GNB. For originality and scientific value for the PhD thesis entitled: "Mental states passive monitoring through Brain-Computer Interface systems"
2014	Scientific Prize "I Guidoniani" - Section Air Traffic Control for young researchers (section Medicine and Science, 2014), awarded by the Association of Italian Aeronautical and Space Medicine (AIMAS), for the work entitled "Study of the mental load of the Comptroller Air Traffic during training missions phases to the simulator"

### Part VIII – Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value
2023	FIT2WORK - Neurophysiological characterization and modelling of "fitness to work", for enhanced training in virtual reality and safer workplaces - <b>PI</b>	PRIN PNRR 2022 (MUR - Ministry of University and Research)	€ 151.886,00 (239,672.00 € <i>Total grant</i> )
2023	CODA - Controller adaptive Digital Assistant - <b>PI</b>	HORIZON-SESAR-2022-DES-ER-01	€ 245.000,00 (€ 2.149.690,00)

2023	Development of a mixed-reality multisensory system for dynamic training of workers in high-risk environments - <b>PI</b>	National Institute for Insurance against Accidents at Work (BRiC -2022-Call for Collaborative Research)	<i>Total grant)</i> € 109.945,00 (€ 299.955,00 <i>Total grant)</i>
2020	Detecting "windows of responsiveness" in Minimally Conscious State patients: a neurophysiological study to provide a multimodal-passive Brain-Computer Interface - <b>I</b>	GR-2019-12369824	€ 65.556,00 (€ 332.778,00 <i>Total grant)</i>
2017	GENIUS - Multidimensional Model Based Machine Learning for Medical Training Assessment - <b>PI</b>	"Research Initiation Projects/Avvio alla ricerca" DR n. 213/2017, University of Rome "La Sapienza"	€ 2.000,00
2016	GURU - Cognitive Neurometrics for Training Support - <b>PI</b>	"Research Initiation Projects/Avvio alla ricerca" DR n. 1809/2016, University of Rome "La Sapienza"	€ 2.100,00
2015	SAFER - neurophysiological of Error Risk Assessment in operational environments - <b>PI</b>	"Research Initiation Projects/Avvio alla ricerca" DR n. 1048/2015, University of Rome "La Sapienza"	€ 2.000,00
2014	Neurophysiological analysis in real time of the mental workload of Air Traffic Controller - <b>PI</b>	"Research Initiation Projects/Avvio alla ricerca" DR n. 847/2014, University of Rome "La Sapienza"	€ 1.500,00
2013	SMARTile - System for Monitoring and Rehabilitation Assisted by advanced Tile - <b>PI</b>	Technological Promoters for Innovation, National Grant	€ 23.081,81

**Part IX – Responsibility for other scientific international and national research projects selected for funding based on competitive calls that provide peer review [Project Manager – Responsible of all the scientific activities of the project; Unit Manager – Responsible of scientific activities of the own unit; Team Member – Involvement in specific scientific activities within the Unit]**

Year	Title	Program	Role
2023-present	Trusty - Trustworthy intelligent system for remote digital tower	H2020 SESAR-RIA, GA101114838	Unit Manager
2021-present	Artimation - Transparent ARTificial Intelligence and AutoMATION to Air Traffic Management Systems	H2020 SESAR-RIA, GA894238	Unit Manager
2020-present	Mindtooth - Wearable device to decode human mental states by neurometrics for a new concept of smart interaction with the surrounding environment	H2020 Fast Track to Innovation (FTI), GA950998	Project Manager
2019-	The pleasure and the engage of	Medium and Large	Team Member

2020	listening the italian classic of literature: a neuroscientific perspective	Equipment, Sapienza University of Rome, RM11916B5ADDCB0B	
2019 - present	SAFEMODE - Strengthening synergies between Aviation and maritime in the area of human Factors towards achieving more Efficient and resilient MODE of transportation	H2020-EU.3.4., GA814961	Unit Manager
2019 - present	HOPE - automatic detection and localization of High frequency Oscillation in Paediatric Epilepsy	MSCA-RISE H2020, GA823958	Unit Manager
2019-2020	MusEmotion - Measuring the cerebral and emotional activity during art perception in museums, theaters and shows: the MusEmotion project	Medium and Large Equipment, Sapienza University of Rome, RM1181642BEAA2D4	Team Member
2019 - present	WorkingAge - Smart Working Environments For All Ages	RIA H2020, GA826232	Team Member
2017-2021	SimuSafe - Behavioral Aspects Of Simulator For Safer Transport	RIA H2020, GA723386	Team Member
2016-2018	STRESS - Human Performance neurometricS Toolbox for highly automated Systems deSign	H2020 SESAR-RIA, GA699381	Unit Manager
2016-2018	MOTO - embodied the Remote Tower	H2020 SESAR-RIA, GA699379	Unit Manager
2016-2018	MINIMA - Mitigating Negative Impacts of Monitoring high levels of Automation	H2020 SESAR-RIA, GA699282	Team Member
2015-2018	SmokeFreeBrain - Multidisciplinary tools for improving the efficacy of public prevention measures against smoking	RIA H2020, GA681120	Team Member
2013-2016	Development of techniques for analysis of EEG signals during cognitive tasks of driving or process control	PRIN 2012 WAANZJ	Team Member
2013-2015	NINA - Neurometrics Indicators for ATM	SESAR-RIA, WPE	Unit Manager
2012-2014	HAND - Hybrid system with Advanced user interface for Environmental Domotic control	Finanziaria Laziale di Sviluppo (FILAS)	Team Member
2012	MINDHOME	TECNO.TIB.E.R.I.S (consorzio tecnologie tiburtino per l'eccellenza nella ricerca, l'innovazione e lo sviluppo) Consortium	Team Member
2008-	TOBI - Tools for Brain-Computer	FP7-ICT, GA224631	Team Member

2013	Interaction ( <i>involvement from 2010</i> )		
2008-2011	ABC - Augmented BNCI Communication ( <i>involvement from 2010</i> )	FP7-ICT, GA287774	Team Member
2008-2011	SM4All - Smart Homes For All. An Embedded Middleware Platform For Pervasive And Immersive Environments For-All ( <i>involvement from 2010</i> )	FP7-ICT, GA224332	Team Member

**Part X – Editorial and reviewing activity**

Year	Title	Position
2023 - present	IEEE Transactions on Biomedical Engineering	Associate Editor
2023 - present	Frontiers in Computational Neuroscience	Associate Editor
2023 - present	Brain Organoid & Systems Neuroscience Journal	Associate Editor
2016 - present	International Journal of Bioelectromagnetism (IJBEM)	Associate Editor
2014 - present	Computational Intelligence and Neuroscience, Hindawi	Editorial Board Member
2019 - present	BrainSciences, MDPI	Editorial Board Member
2024 - present	Special Issue : "passive Brain-Computer Interfaces: Toward an "Out of the Lab" Employment" international journal <i>Frontiers in Computational Neuroscience</i>	Guest Editor
2023 - present	Special Issue: "Deep into the Brain: Artificial Intelligence in Brain Diseases" international journal <i>BrainSciences, MDPI</i>	Guest Editor
2021 - 2022	Special Issue: "Brain Plasticity, Cognitive Training and Mental States Assessment" international journal <i>BrainSciences, MDPI</i>	Guest Editor
2020-2021	Special Issue: "Network Neuroscience: Brain Networks in the Field of Affective, Cognitive and Personality Neuroscience" international journal <i>BrainSciences, MDPI</i>	Guest Editor
2019-2020	Special Issue: "Out of the Lab Employment of Neurophysiological Measures and Sustainability" international journal <i>Sustainability, MDPI</i>	Guest Editor
2018-2019	Special Issue: "neurophysiological Measures for Human Factors Evaluation in Real World Settings" international journal <i>Computational Intelligence and Neuroscience, Hindawi</i>	Guest Editor
2015-2016	Special Issue: "Advances in eye tracking technology: theory, algorithms and applications" international journal <i>Computational Intelligence and Neuroscience, Hindawi</i>	Guest Editor
2011 - present	Reviewing activity on peer-reviewed and impacted journals and conference papers in the fields of bioengineering and	Reviewer of journal and conference papers