

## EMMA COLAMARINO

### Curriculum Vitae

#### Part I – General Information

Full Name	Emma Colamarino
Citizenship	Italian
Spoken Languages	Italian, English, German

#### Part II – Education

Type	Year	Institution	Notes (Degree)
PhD (Doctor Europaeus)	2019	Sapienza, University of Rome	<b>Bioengineering</b> (with honours) Thesis Title: <i>Implementing physiologically-based approaches to improve Brain-Computer Interfaces usability in post-stroke motor rehabilitation</i> <a href="https://hdl.handle.net/11573/1259587">https://hdl.handle.net/11573/1259587</a>
Licensure	2014	Sapienza, University of Rome	Industrial Engineering
Master's Degree	2014	Sapienza, University of Rome	Biomedical Engineering (110 cum laude) Titolo della tesi: <i>Elettrodi concentrici e bipolari a confronto. Il crosstalk nei segnali elettromiografici</i>
Post-graduate studies	2013	Sapienza, University of Rome	Prevention and Protection Safety Service Manager
Bachelor's Degree	2011	Sapienza, University of Rome	Clinical Engineering (110 cum laude)

#### Part III – Appointments

##### III/A – Academic Appointments

Start	End	Institution	Position
01.08.2022	to date	Sapienza, University of Rome, Dep. of Computer, Control, and Management Engineering (Italy)	<b>Post-Doc Fellow</b> (Assegnista di Ricerca, ING-INF/06)
01.08.2020	31.07.2022	Sapienza, University of Rome, Dep. of Computer, Control, and Management Engineering (Italy)	<b>Post-Doc Fellow</b> (Assegnista di Ricerca, ING-INF/06)
01.01.2019	31.07.2020	Sapienza, University of Rome, Dep. of Computer, Control, and Management Engineering (Italy)	<b>Post-Doc Fellow</b> (Assegnista di Ricerca, ING-INF/06)

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### III/B – Other Appointments

Start	End	Institution	Position
Dec 2018	Dec 2018	Fondazione Santa Lucia, IRCCS, Rome (Italy)	<b>Consulenza scientifica</b> Project <i>The Promoter 2.0: a progressive modular Brain Computer Interface-based training system to support upper limb motor recovery after stroke</i>
Oct 2014	Oct 2015	Centro Nazionale Sangue, sede Piemonte e Valle d'Aosta (Ivrea – TO)	<b>Research Fellow</b> Project <i>National survey of the application of the requirements on the validation of processes and procedures (plasma freezing procedure validated at blood transfusion centres)</i>

### III/C – Research Appointments

Start	End	Institution	Position
2019	to date	Fondazione Santa Lucia, IRCCS, Rome (Italy)	<b>Researcher</b> at Spinal Center and Spinal Rehabilitation Lab (Dr. Marco Molinari) for the project DiSCloser (see Section VI B)
2018	2019	Imperial College London, London (UK)	<b>Visiting PhD</b> student at the Department of Bioengineering under the supervision of the prof. Dario Farina
2015	to date	Fondazione Santa Lucia, IRCCS, Rome (Italy)	<b>Researcher</b> at Neuroelectrical Imaging and <b>Brain-Computer Interface Lab</b> (Dr. Donatella Mattia) under the bilateral agreement signed between the Foundation and the University
2015	to date	Sapienza, University of Rome (Italy)	<b>Researcher</b> at the Bioengineering and Bioinformatics Lab, Dep. of Computer, Control, and Management Engineering

### Part IV – Teaching experience

Year	Institution	Lecture/Course
2022	Sapienza, University of Rome	Lecturer ( <b>Incarico di collaborazione alla docenza</b> ) for the course <i>Advanced Methods for Biomedical Data Analysis</i> (ING-INF/06, 3 CFU), MD in Biomedical Engineering
2022	Sapienza, University of Rome	Thesis <b>Supervisor</b> of 2 MD in Biomedical Engineering
2021	Christian Medical College Vellore (India); The University of Queensland and Griffith University (Australia)	<b>Lecturer</b> for the International Summer/Winter School and Hackathon on Neurorehabilitation Engineering

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2021-2022	Sapienza, University of Rome	<b>Lecturer</b> (seminars) for the course <i>Neuroengineering</i> (ING-INF/06), MD in Artificial Intelligence and Robotics
2019 - to date	Sapienza, University of Rome	Mention as Expert ( <b>Cultore della materia</b> ) in <i>Advanced Biomedical Data Analysis, Biomedical Signal Processing, Neuroengineering</i>
2017- to date	Sapienza, University of Rome	<b>Member</b> of the <b>examination board</b> of <i>Advanced Methods for Biomedical Data Analysis</i> (ING-INF/06), MD in Biomedical Engineering
2016- to date	Sapienza, University of Rome	<b>Tutor</b> (lessons, seminars, and practice exercises) for the course <i>Advanced Methods for Biomedical Data Analysis</i> (ING-INF/06), MD in Biomedical Engineering
2016- to date	Sapienza, University of Rome	Thesis <b>Co-supervisor</b> 1 PhD in Bioengineering, 15 MD in Biomedical Engineering, 1MD in Management Engineering, 1 MD in Artificial Intelligence and Robotics, 1 MD in Control Engineering

## Part V - Society memberships, Awards and Honours

Year	Title
2022	International Scientific Programme Committee Member and Organizer of the Special Session titled <i>Effective Brain-Computer Interfaces based on active paradigms and extended reality</i> , IEEE International Conference on Metrology for Extended Reality, Artificial Intelligence, and Neural Engineering, 26-28 October 2022 Rome (Italy).
2022	IEEE Engineering in Medicine and Biology Society, Member
2018 - to date	Brain-Computer Interface Society, Member
2018	Student Award to attend the 7 <sup>th</sup> International BCI Meeting, California (USA)
2017-2019	IEEE, Member
2014 - to date	Professional Association of Engineers of Bari, Member
2014	Special Mention for the career, unanimously awarded by the Biomedical Engineering's Degree Board on 21 March 2014, for the brilliant curriculum

**Part VI – Responsibility and Participation in funded projects**

VI/A – Principal Investigator

Year	Title	Program	Grant value
2021	MoRe MuSyC: Post-stroke Motor Recovery Muscle Synergy quality Capture	Avvio alla Ricerca, Progetti di Ateneo, Sapienza University of Rome	2.200 €
2020	PHYDBEC: Physiology-evidence based indices to describe movement in Box and Block test execution	Avvio alla Ricerca, Progetti di Ateneo, Sapienza University of Rome	2.000 €
2018	Synergies-based real-time monitoring to improve post-stroke rehabilitation	Avvio alla Ricerca, Progetti di Ateneo, Sapienza University of Rome	1.000 €
2017	Motor Recovery supported by hybrid Brain-Computer Interface and complex network theory	Mobility Projects Call for Research Doctorates, Sapienza University of Rome	4.000 €
2017	Multimodal classification of upper limb movements during post-stroke rehabilitation	Avvio alla Ricerca, Progetti di Ateneo, Sapienza University of Rome	1.000 €

VI/B – Investigator

Year	Title	Program	Grant value
2022- to date	HARIA Human-Robot Sensorimotor Augmentation	HORIZON-CL4-2021	4.595.300 €
2021- to date	DiSCIoSer: Unlocking recovery potential of arm sensorimotor functions after spinal cord injury by promoting activity-dependent brain plasticity and modeling the causal relationship between brain plasticity and recovery of function	Ricerca Finalizzata - National Ministry of Health	450.000 €
2020- to date	MOVE: Multimodal framework for the evaluation of upper-limb motor impairment and its recovery in stroke patients	Progetti di Ateneo, Sapienza University of Rome	11.000 €
2019- to date	The PROMOTOER: a Brain Computer Interface-based intervention that promotes upper limb functional motor recovery in subacute stroke patients. A randomized controlled trial protocol to test long-term efficacy and to identify determinants of response to intervention	Ricerca Finalizzata - National Ministry of Health	332.445 €

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2019- to date	RECOMmENceR: RE-establishing Cortico Muscular COMunication to ENhance Recovery. Clinical validation of BCI-controlled Functional Electrical Stimulation for upper limb rehabilitation after stroke	Ricerca Finalizzata - National Ministry of Health	290.555 €
2017	Interfacce cervello-computer ibride: dispositivo per il riconoscimento in real-time di pattern elettromiografici dell'arto superiore in pazienti con esiti motori di ictus	Ricerca Corrente - National Ministry of Health	-
2017	Ottimizzazione dei parametri di controllo di interfacce cervello computer a supporto della riabilitazione motoria post-ictus	Ricerca Corrente - National Ministry of Health	-
2017	Validazione in ambiente clinico reale di un sistema di interfaccia cervello-computer basato su EEG per la riabilitazione motoria dell'arto superiore; studio clinico e neurofisiologico su una popolazione di pazienti sottoposti a programma riabilitativo standard	Ricerca Corrente - National Ministry of Health	-

## Part VII – Service for the Scientific Community

Year	Title
2021	<b>Reviewer</b> of Research proposal for LifeArc & MND Association Translational Research Fund
2019- to date	<b>Reviewer</b> for IEEE Access, IEEE Transactions, IEEE Journal of Biomedical and Health Informatics, Biomedical Physics & Engineering Express, Frontiers, Journal of Neural Engineering, Measurement Science and Technology, Brain Sciences, Sensors (on average 6 reviews per year; 13 reviews in 2022)

**Part VIII – Research Activities**

Keywords	Brief Description
Brain-Computer Interface (BCI)	<p>My research activity is framed in the (i) development of advanced EEG and EMG signal processing methods and (ii) development, implementation, and validation of BCI-based protocols to support the cerebral function recovery.</p> <p>As for the EEG and EMG signal, I designed and implemented the experimental protocol and set-up to collect high-density EEG data for the projects The PROMOTOER and DiSCIOser (see section VI) and EMG data for the project RECOMMENCeR (see section VI). For the latter, I also collected data from 20 healthy and 15 stroke subjects.</p> <p>I analysed EEG data to (i) explore the best signal processing techniques to optimize the performance of BCI systems, as revealed by [7], [10] and (ii) identify new EEG features potentially useful to control BCI systems as well as marker of the cerebral function recovery [19], [20].</p> <p>I implemented EMG advanced algorithms to investigate upper limb pathological movements during simple task as those relevant in the rehabilitative protocols and complex task as those revealing compensatory movement strategies in stroke population [2], [3], [4].</p> <p>In The PROMOTOER project, I have been tasked with the designing and implementation of a EEG signal processing pipeline to select the best features to classify motor imagery tasks. To this aim, I tested several feature selection and classification (machine learning) approaches [8] resulting in the definition of a pipeline and in the design and implementation of a user-friendly tool to extract significant BCI control features that consider rehabilitation principles [9].</p> <p>I cooperated (i) in the development and implementation of a new generation of BCIs, hybrid-BCIs combining real-time processing of EEG and EMG signals, for the post-stroke motor rehabilitation in the context of the project RECOMMENCeR [15] and (ii) in the context of a Randomized Controlled Trial for the validation of BCI-based protocols in supporting the sensorimotor function recovery of stroke and spinal cord injury patients [18, 23].</p>
Electroencephalographic (EEG) signal processing	
Electromyographic (EMG) signal processing	
Machine learning	
Neurorehabilitation	
Stroke	
Spinal Cord Injury	

**Part IX – Participation to national and international events (speaker)**

IX/A – Invited speaker

2022	BCI & Neurotech Masterclass organized by g.tec medical engineering GmbH Austria	Brain-Computer Interface for post-stroke sensorimotor function recovery
2021	Digital Meet – Challenges and Perspectives in Neurorobotics (University of Padua, Italy)	Neurotechnologies for rehabilitation

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IX/B – Oral presentations at conferences

2022	44 <sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Glasgow, UK	Distinctive physiological muscle synergy patterns define the Box and Block Task execution as revealed by electromyographic features
2022	44 <sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Glasgow, UK	Low Frequency Brain Oscillations during the execution and imagination of simple hand movements for Brain-Computer Interface applications
2018	International Conference on NeuroRehabilitation, Pisa, Italy	Bipolar filters improve usability of Brain-Computer Interface technology in post-stroke motor rehabilitation
2017	School & Symposium on Advanced Neurorehabilitation, Baiona, Spain	Neurophysiological constraints of control parameters for a brain computer interface system to support post-stroke motor rehabilitation

IX/C – Poster presentation at conferences

2022	22 <sup>nd</sup> Annual Congress of the Italian Society of Movement Analysis, Bari, Italy	Muscle synergy patterns in the Box & Block Task execution
2021	8 <sup>th</sup> International BCI Meeting, virtual	BCI-assisted Motor Imagery training to promote functional recovery in cervical Spinal Cord Injury patients: preliminary data
2021	10 <sup>th</sup> International IEEE/EMBS Conference on Neural Engineering, virtual	Inter-muscular coherence features to classify upper limb simple tasks
2019	8 <sup>th</sup> Graz Brain-Computer Interface Conference, Graz, Austria	SWLDA offers a valuable trade-off between interpretability and accuracy for rehabilitative BCIs
2019	41 <sup>st</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Berlin, Germany	Adaptive learning in the detection of Movement Related Cortical Potentials improves usability of associative Brain-Computer Interfaces
2018	7 <sup>th</sup> International BCI Meeting, California, USA	Semiautomatic physiologically driven feature selection improves the usability of a brain computer interface system in post-stroke motor rehabilitation
2016	5 <sup>th</sup> Conference of the National Group of Bioengineering, Naples, Italy	Concentric-ring electrodes reduce crosstalk in surface EMG

**X – Participations in national and international research groups**

Start	End	Institution	Projects/ Products
2019	to date	Spinal Center and Spinal Rehabilitation Lab, Fondazione Santa Lucia, IRCCS, Italy (see Appointments IIC)	Collaboration to validate the efficacy of a BCI-based intervention for hand sensorimotor recovery in Spinal Cord Injury patients, as evidenced by the participation to the project DiSCIoSer (see section VIB) and the publication in [5]
2019	2019	Operations Research Group at the Dep. Dep. of Computer, Control, and Management Engineering, Sapienza, University of Rome (Prof. ssa Laura Palagi)	Collaboration to implement and test advanced machine learning algorithms to classify motor imagery tasks. Such collaboration allowed me to participate to the Graz BCI conferences (see section IXC) and publish the article in [8].
2018	2019	Department of Bioengineering, Imperial College London, UK (see Appointments IIC)	Collaboration on development of new adaptive algorithms for the detection of EEG features to improve the usability of associative BCIs. Such collaboration extended beyond my visiting period as PhD student (lasted 4 months) and resulted in a publication [6].
2015	to date	Neuroelectrical Imaging and Brain-Computer Interface Lab, Fondazione Santa Lucia, IRCCS, Italy (see Appointments IIC)	Such collaboration has been strengthened by an official bilateral agreement between the Dept. of Computer, Control and Management Engineering of Sapienza University of Rome and the IRCCS Fondazione Santa Lucia. This contributed to the establishment of a multi-disciplinary team composed by neurologists, psychologists, and engineers with the aim to employ bioengineering expertise in the study of healthy and pathological (stroke and spinal cord injury) mechanisms both from the brain and muscle point of view. Such collaboration allowed me to publish several articles in clinical neuroscience and bioengineering fields and to participate to different projects funded by the National Ministry of Health, e.g., RECOMmENceR and The Promotoer (see section VIB), and by the HORIZON Program.
2015	to date	Bioengineering and Bioinformatics Lab, Sapienza, University of Rome, Italy (see Appointments IIC)	Collaboration aiming at the (i) development of advanced methodologies for EEG/EMG signal processing and machine learning and (ii) development and implementation of BCIs as tool to improve the cerebral function. Such collaboration allowed me to publish several articles in bioengineering fields [1], [2], [4], [10] and to participate to different projects, e.g., Progetti di



**Part XI – Summary of Scientific Achievements**

Product type	Number	Data Base	Start	End
Papers [international]	14	Scopus	2019	2023
- Journal	5	Scopus	2019	2023
- Conference	9	Scopus	2019	2023

Total Impact factor	25.602
Average Impact factor**	4.267
Total Citations	28
Average Citations per Product	2
Hirsch (H) index	3
Normalized H index *	0.75

\*H index divided by the academic seniority.

To compute the academic seniority, I approximated the number of years (from 2019 to 03.02.2023) to the nearest integer, i.e., 4 years.

\*\* To compute the Average Impact Factor, I considered the 5 articles published in journals indexed in Clarivate.

**Part XII –Publications**

Le pubblicazioni [1], [2], [3], [4], [6], [7], [14], [15], [18], [19], [21], [26] sono quelle selezionate per la partecipazione al concorso in oggetto (si vedano allegati 4 e 5).

- [1] **Colamarino, E.**, Pichiorri, F., Toppi, J., Mattia, D., Cincotti, F., 2022. Automatic Selection of Control Features for Electroencephalography-Based Brain–Computer Interface Assisted Motor Rehabilitation: The GUIDER Algorithm. *Brain Topography* 35, 182–190. <https://doi.org/10.1007/s10548-021-00883-9>
- [2] **Colamarino, E.**, de Seta, V., Toppi, J., Pichiorri, F., Conforti, I., Mileti, I., Palermo, E., Mattia, D., Cincotti, F., 2022. Distinctive physiological muscle synergy patterns define the Box and Block Task execution as revealed by electromyographic features, in: 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC). Presented at the 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), pp. 5124–5127. <https://doi.org/10.1109/EMBC48229.2022.9871699>
- [3] **Colamarino, E.**, de Seta, V., Masciullo, M., Cincotti, F., Mattia, D., Pichiorri, F., Toppi, J., 2021. Corticomuscular and Intermuscular Coupling in Simple Hand Movements to Enable a Hybrid Brain–Computer Interface. *Int. J. Neur. Syst.* 31, 2150052. <https://doi.org/10.1142/S0129065721500520>
- [4] **Colamarino, E.**, Pichiorri, F., Toppi, J., de Seta, V., Masciullo, M., Mattia, D., Cincotti, F., 2021. Inter-muscular coherence features to classify upper limb simple tasks, in: 2021 10th International IEEE/EMBS Conference on Neural Engineering (NER). Presented at the 2021 10th International IEEE/EMBS Conference on Neural Engineering (NER), pp. 57–60. <https://doi.org/10.1109/NER49283.2021.9441150>
- [5] **Colamarino, E.**, Pichiorri, F., Masciullo, M., Tamburella, F., Pisotta, I., Scivoletto, G., Molinari, M., Cincotti, F., Mattia D., 2021. BCI-assisted Motor Imagery training to promote functional recovery in cervical Spinal Cord Injury patients: preliminary data. Abstract Book of the 8th International BCI Meeting, pag. 44

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- [6] **Colamarino, E.**, Muceli, S., Ibáñez, J., Mrachacz-Kersting, N., Mattia, D., Cincotti, F., Farina, D., 2019. Adaptive learning in the detection of Movement Related Cortical Potentials improves usability of associative Brain-Computer Interfaces, in: 2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC). Presented at the 2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), pp. 3079–3082. <https://doi.org/10.1109/EMBC.2019.8856580>
- [7] **Colamarino, E.**, Pichiorri, F., Mattia, D., Cincotti, F., 2019. Bipolar Filters Improve Usability of Brain-Computer Interface Technology in Post-stroke Motor Rehabilitation, in: Masia, L., Micera, S., Akay, M., Pons, J.L. (Eds.), *Converging Clinical and Engineering Research on Neurorehabilitation III*, Biosystems & Biorobotics. Springer International Publishing, Cham, pp. 911–914. [https://doi.org/10.1007/978-3-030-01845-0\\_183](https://doi.org/10.1007/978-3-030-01845-0_183)
- [8] **Colamarino, E.**, Colombo, T., Pichiorri, F., Mattia, D., Palagi, L., Cincotti, F., 2019. SWLDA offers a valuable trade-off between interpretability and accuracy for rehabilitative BCIs. *Proceedings of the 8th Graz Brain-Computer Interface Conference*, pag. 285-290. <https://doi.org/10.3217/978-3-85125-682-6-52>
- [9] **Colamarino, E.**, Pichiorri, F., Mattia, D., Cincotti, F., 2018. Semiautomatic physiologically-driven feature selection improves the usability of a brain computer interface system in post-stroke motor rehabilitation. *Abstract Book of the 7th International BCI Meeting: “BCIs: not getting lost in Translation”*, pag. 96-97
- [10] **Colamarino, E.**, Pichiorri, F., Mattia, D., Cincotti, F., 2017. Spatial filters selection towards a rehabilitation BCI. *Proceedings of the 7th Graz Brain-Computer Interface Conference*, pag. 92-96. <https://doi.org/10.3217/978-3-85125-533-1-18>
- [11] **Colamarino, E.**, Pichiorri, F., Schettini, F., Martinoia, M., Mattia, D., Cincotti, F., 2017. GUIDER: a GUI for semiautomatic, physiologically driven EEG feature selection for a rehabilitation BCI. *Proceedings of the 7th Graz Brain-Computer Interface Conference*, pag. 97-101. <https://doi.org/10.3217/978-3-85125-533-1-19>
- [12] **Colamarino, E.**, Pichiorri, F., Mattia, D., Cincotti, F., 2017, Neurophysiological constraints of control parameters for a brain computer interface system to support post-stroke motor rehabilitation. *Proceedings of the School & Symposium on Advanced Neurorehabilitation 2017*
- [13] **Colamarino, E.**, Merlo, E., Boccia, G., Toppi, J., Mattia, D., Cincotti, F., 2016. Concentric-ring electrodes reduce crosstalk in surface EMG. *Proceedings of the 5th Conference of the National Group of Bioengineering*.
- [14] de Seta, V., **Colamarino, E.**, Cincotti, F., Mattia, D., Mongiardini, E., Pichiorri, F., Toppi, J., 2022. Cortico-Muscular Coupling Allows to Discriminate Different Types of Hand Movements, in: 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC). Presented at the 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), pp. 2324–2327. <https://doi.org/10.1109/EMBC48229.2022.9871383>
- [15] de Seta, V., Toppi, J., **Colamarino, E.**, Molle, R., Castellani, F., Cincotti, F., Mattia, D., Pichiorri, F., 2022. Cortico-muscular coupling to control a hybrid brain-computer interface for upper limb motor rehabilitation: A pseudo-online study on stroke patients. *Frontiers in Human Neuroscience* 16. <https://doi.org/10.3389/fnhum.2022.1016862>
- [16] de Seta, V., Toppi, J., Pichiorri, F., Masciullo, M., **Colamarino, E.**, Mattia, D., Cincotti, F., 2021. Towards a hybrid EEG-EMG feature for the classification of upper limb movements: comparison of different processing pipelines, in: 2021 10th International IEEE/EMBS Conference on Neural Engineering (NER). Presented at the 2021 10th International IEEE/EMBS Conference on Neural Engineering (NER), pp. 355–358. <https://doi.org/10.1109/NER49283.2021.9441390>
- [17] de Seta, V., **Colamarino, E.**, Pichiorri, F., Toppi, J., Masciullo, M., Cincotti, F., Mattia, D., 2021. Hand movements classification for a hybrid rehabilitative BCI: study on corticomuscular and intermuscular coherence. *Abstract Book of the 8th International BCI Meeting*, pag. 56
- [18] Mattia, D., Pichiorri, F., **Colamarino, E.**, Masciullo, M., Morone, G., Toppi, J., Pisotta, I., Tamburella, F., Lorusso, M., Paolucci, S., Puopolo, M., Cincotti, F., Molinari, M., 2020. The Promotoer, a brain-computer

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interface-assisted intervention to promote upper limb functional motor recovery after stroke: a study protocol for a randomized controlled trial to test early and long-term efficacy and to identify determinants of response. BMC Neurology 20, 254. <https://doi.org/10.1186/s12883-020-01826-w>

- [19] Mongiardini, E., **Colamarino, E.**, Toppi, J., de Seta, V., Pichiorri, F., Mattia, D., Cincotti, F., 2022a. Low Frequency Brain Oscillations during the execution and imagination of simple hand movements for Brain-Computer Interface applications, in: 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC). Presented at the 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), pp. 226–229. <https://doi.org/10.1109/EMBC48229.2022.9871772>
- [20] Mongiardini, E., **Colamarino, E.**, Toppi, J., De Seta, V., Pichiorri, F., Mattia, D., Cincotti, F., 2022b. Low Frequency Brain Oscillations for Brain-Computer Interface applications: from the sources to the scalp domain, in: 2022 IEEE International Conference on Metrology for Extended Reality, Artificial Intelligence and Neural Engineering (MetroXRINE). Presented at the 2022 IEEE International Conference on Metrology for Extended Reality, Artificial Intelligence and Neural Engineering (MetroXRINE), pp. 709–713. <https://doi.org/10.1109/MetroXRINE54828.2022.9967600>
- [21] Pichiorri, F., Toppi, J., de Seta, V., **Colamarino, E.**, Masciullo, M., Tamburella, F., Lorusso, M., Cincotti, F., Mattia, D., 2023. Exploring high-density corticomuscular networks after stroke to enable a hybrid Brain-Computer Interface for hand motor rehabilitation. Journal of NeuroEngineering and Rehabilitation 20, 5. <https://doi.org/10.1186/s12984-023-01127-6>
- [22] Pichiorri, F., de Seta, V., **Colamarino, E.**, Toppi, J., Cincotti, F., Mattia, D., 2021. Movement-Related Cortical Potential during post-stroke motor recovery: preliminary study for a novel hybrid BCI paradigm. Abstract Book of the 8th International BCI Meeting, pag. 43
- [23] Pichiorri, F., **Colamarino, E.**, Cincotti, F., Mattia, D., 2019. An All-in-One BCI-Supported Motor Imagery Training Station: Validation in a Real Clinical Setting with Chronic Stroke Patients, in: Masia, L., Micera, S., Akay, M., Pons, J.L. (Eds.), Converging Clinical and Engineering Research on Neurorehabilitation III, Biosystems & Biorobotics. Springer International Publishing, Cham, pp. 883–887. [https://doi.org/10.1007/978-3-030-01845-0\\_177](https://doi.org/10.1007/978-3-030-01845-0_177)
- [24] Pichiorri, F., **Colamarino, E.**, Cincotti, F., Mattia, D., 2018. Brain-computer interface technology for upper limb rehabilitation after stroke: a translational effort. Meeting Abstract of the 4th Congress of the European Academy of Neurology, 2018. European Journal of Neurology, Vol. 25, Supp 2, pag. 50.
- [25] Pichiorri, F., **Colamarino, E.**, Cincotti, F., Mattia, D., 2018. The Promotoer: a successful story of translational research in BCI for motor rehabilitation. Proceedings of the 7th Graz Brain-Computer Interface Conference, pag. 410-413. <https://doi.org/10.3217/978-3-85125-533-1-75>
- [26] Ranieri, A., Pichiorri, F., **Colamarino, E.**, de Seta, V., Mattia, D., Toppi, J., 2023. Parallel Factorization to Implement Group Analysis in Brain Networks Estimation. Sensors 23, 1693. <https://doi.org/10.3390/s23031693>
- [27] Schettini, F., Martinoia, M., Pichiorri, F., **Colamarino, E.**, Mattia, D., Cincotti, F., 2016. Automatic features selection in BCI-supported motor imagery practice for stroke rehabilitation. Proceedings of the 5th Conference of the National Group of Bioengineering.
- [28] Boccia, G., Dardanello, D., Rosso, V., **Colamarino, E.**, Tarperi, C., Schena, F., Rainoldi, A., 2014. Neuromuscular fatigue on locomotor and non-locomotor muscles induced by half marathon run, VI SISMES Conference, Research and Training applied to motor and sport science.

Rome, 04/02/2023