

**PERSONAL INFORMATION**

<b>Last Name</b>	CHIARELLI
<b>First Name</b>	Antonio Maria
<b>Date of Birth</b>	18/01/1985
<b>Nationality</b>	Italian Green Card owner, Stati Uniti d'America dal 2014 al 2017
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<b>Google Scholar</b>	<a href="https://scholar.google.com/citations?user=LCtieCsAAAAJ&amp;hl=it&amp;oi=ao">https://scholar.google.com/citations?user=LCtieCsAAAAJ&amp;hl=it&amp;oi=ao</a>
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**ACADEMIC POSITION**

<b>Qualification</b>	Assistant Professor (Tenure Track)
<b>SSD</b>	FIS/07 – Medical Physics
<b>Italian National Academic Scientific Sector</b>	02/D1 – Applied Physics
<b>Date of Employment</b>	01/07/2017
<b>University and Department of Affiliation</b>	University 'G. d'Annunzio' of Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (D.N.I.S.C.)
<b>Place</b>	Institute for Advanced Biomedical Technologies (I.T.A.B.), Via Luigi Polacchi, 13 - 66100 Chieti, Italy

**EDUCATION**

<b>Year of graduation</b>	<b>Qualification</b>	<b>Location</b>
2013	PhD in Functional Neuroimaging	University 'G. d'Annunzio' di Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (D.N.I.S.C.), Italy
2009	Master's Degree in Physics Engineering	Politecnico di Milano, Department of Physics, , Milan, Italy
2006	Bachelor's Degree in Physics Engineering	Politecnico di Milano, Department of Physics, , Milan, Italy

**SCIENTIFIC AND PROFESSIONAL HISTORY**

<b>Year</b>	<b>Ruolo/Tipologia</b>	<b>Institute/Center</b>	<b>Project/Other Information</b>
2020 - present	Tenure-Track Assistant Professor (Tenure Track) in Applied and Medical Physics	University 'G. d'Annunzio' di Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (D.N.I.S.C.), Italy	Development of novel methods to probe brain physiology with Magnetic Resonance and Diffuse Optical Imaging
2020 - present	Confirmed Affiliated Research Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA	Methods, algorithms and analytical procedures for high density diffusive optical imaging and for anatomical and functional magnetic resonance imaging, mainly applied to the study of aging
2019 - 2020	Confirmed Affiliated Research Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA	Methods, algorithms and analytical procedures for high density diffusive optical imaging, mainly applied to the study of aging
2018 - present	Scientific Consultant	Next2U s.r.l.	Development, implementation and sale of hardware and software systems for non-invasive monitoring of cardiovascular status as well as autonomic and brain activity
2018 - 2019	Affiliated Research Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA	Methods, algorithms and analysis for high density diffusive optical imaging and for anatomical and functional magnetic resonance imaging
2017 - 2020	Fixed-Term Assistant Professor in Applied and Medical Physics	University 'G. d'Annunzio' di Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (D.N.I.S.C.), Italy	Assistant Professor Position funded of grant number 692470, H2020 ECSEL-04-2015-ASTONISH. The ASTONISH grant concerns the multimodal implementation, both from a hardware and from a software perspective, of electroencephalography with functional near infrared spectroscopy and electrocardiography with photoplethysmography

2013 - 2017	Post-Doctoral Fellow	Post-Doctoral Fellow	Methods, algorithms and analysis for high density diffusive optical imaging and for anatomical and functional magnetic resonance imaging
2010 - 2013	PhD in 'Functional Neuroimaging', XXV cycle (with scholarship).	University 'G. d'Annunzio' di Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (D.N.I.S.C.), Italy	Study of cortical activity through near infrared optical imaging

#### MEMBER OF SCIENTIFIC SOCIETES

Period	Scientific Society
2020 - present	International Society of Magnetic Resonance in Medicine (ISMRM)
2019 - present	Organization for Human Brain Mapping
2019 - present	IEEE Society (N. 95397142)
2019 - present	IEEE Engineering in Medicine and Biology Society (N. 95397142)
2018 - present	Gruppo Nazionale di Bioingegneria (GNB)
2012 - present	Society for functional Near-Infrared Spectroscopy (SfNIRS)

#### TITLES AND AWARDS

Year	Title/Award
2020	Winner of the comparative procedure for the call of no. 1 Fixed-term Assistant Professor (pursuant to Law no.240 of 30 December 2010, art.24, paragraph 3, letter A), SSD FIS / 07 - Applied Physics (to Cultural, Environmental, Biology and Medicine) , Competition Sector 02 / D1, at the Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara. D.R. n. 745/2020 Prot. No. 34672 of 16/06/2020 Classif. VII / 1.
2020	Winner of the comparative procedure for the call of no. 1 Fixed-term Assistant Professor (pursuant to Law n.240 of 30 December 2010, art.24, paragraph 3, letter A), SSD ING-INF / 06 - Electronic and Computer Engineering, Competition Sector 09 / G2, at the Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara. D.R. n. 728/2020 Prot. 34010 of 12/06/2020 Classif. VII / 1.
2020	Confirmed Affiliated Research Fellow, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA
2019	First author of one of the most cited articles of the Journal of Neural Engineering in the period 2018-2019
2019	Confirmed Affiliated Research Fellow, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA
2018	Qualified to the position of Associate Professor for the Italian national academic competition sector 02 / D1- Applied Physics, Didactics and History of Physics: 12-09-2018/12-09-2027.

2018	Qualified to the position of Associate Professor for the Italian national academic competition sector 09 / G2- Bioengineering:12-09-2018/12-09-2027.
2018	Suitable for enrollment by an Italian University, Italian program 'Return of Brains' Rita Levi Montalcini. 05-08-2018
2018	Affiliated Research Fellow, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA

#### **DIRECT INVOLVMENT IN RESEARCH GRANTS**

<b>Project</b>	<b>Multimodal Brain Computer Interface with Optical imaging, Electroencephalography and Advanced Artificial Intelligence</b>
<b>Period</b>	2021
<b>Funding Agency</b>	AURA-LABS STD
<b>Host</b>	Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara
<b>Project Duration</b>	12 months
<b>Funding</b>	€ 44,000
<b>Role</b>	PI

<b>Project</b>	<b>Optical measures of cerebral arterial function as predictors of brain and cognitive aging. N. 1R01AG059878</b>
<b>Period</b>	2018-2024
<b>Funding Agency</b>	National Institutes of Health (NIH), USA
<b>Host</b>	Beckman Institutes for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA
<b>Project Duration</b>	72 months
<b>Funding</b>	\$ 3,459,850
<b>Role</b>	Collaborating researcher; implementation of algorithms, data analysis, images and signal, drafting of scientific manuscripts

<b>Project</b>	<b>Department of Excellence</b>
<b>Period</b>	2018-2023
<b>Funding Agency</b>	Italian Ministry of Education and Research
<b>Host</b>	Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara
<b>Project Duration</b>	60 months
<b>Funding</b>	€ 8.000.000
<b>Role</b>	Collaborating researcher; participation in the writing of the research proposal

<b>Project</b>	<b>Advancing Smart Optical Sensing for Health, 692470, H2020 ECSEL-04-2015-ASTONISH</b>
<b>Period</b>	2017-2019
<b>Funding Agency</b>	European Union
<b>Main Host</b>	Philips Medical Systems International BV
<b>Project Duration</b>	36 months
<b>Total Funding</b>	€ 18.444.623,25
<b>Funding</b>	€ 240.000
<b>Role</b>	Collaborating researcher; development and validation of hardware systems, implementation of data, image and signal analysis algorithms, in vivo measurements, drafting of reports for the European Commission, drafting of scientific manuscripts

<b>Project</b>	<b>Application of multi-distance diffuse optical tomography to the study of the human brain. N. 5R56MH097973</b>
<b>Period</b>	2012-2015
<b>Funding Agency</b>	National Institutes of Health (NIH), Stati Uniti d'America
<b>Host</b>	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Illinois, USA
<b>Project Duration</b>	36 months
<b>Funding</b>	€ 932,241
<b>Role</b>	Collaborating researcher; implementation of data, image and signal analysis algorithms, in vivo measurements, drafting of scientific manuscripts

<b>Project</b>	<b>Cognitive and Brain Development in Premature Infants</b>
<b>Period</b>	2012-2015
<b>Funding Agency</b>	CNLM/Abbott Nutrition
<b>Host</b>	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Illinois, UDS
<b>Project Duration</b>	36 months
<b>Funding</b>	\$ 1,040,068
<b>Role</b>	Collaborating researcher; validation of hardware systems, implementation of data, image and signal analysis algorithms, in vivo measurements, drafting of scientific manuscripts

#### **RESEARCH PROPOSALS UNDER REVIEW**

<b>Project</b>	<b>Energetic dysfunction in the inflamed MS brain</b>
<b>Funding Agency</b>	FISM, Italian foundation for Multiple Sclerosis
<b>Main Host</b>	Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara
<b>Project Duration</b>	36 months
<b>Funding</b>	€ 344.460,00
<b>Role</b>	PI

#### **RESULTS OBTAINED IN TECHNOLOGICAL TRANSFER**

<b>Type</b>	<b>Italian Patent</b>
<b>Title</b>	Circuit, procedure and algorithm to operate SiPM photodetectors in optimal conditions for fNIRS / DOT systems
<b>Authors / Inventors</b>	Lombardo SL, Maira G, Libertino S, Merla A, <b>Chiarelli AM</b>
<b>Identification Number</b>	10201900016424
<b>Year</b>	2019

#### **TEACHING OR RESEARCH (FELLOWSHIP) APPOINTMENTS AT RELEVANT INTERNATIONAL INSTITUTIONS**

<b>Period</b>	<b>Position</b>	<b>Organization /University</b>
2020 - present	Confirmed Affiliated Research Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA

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2019 - 2020	Confirmed Affiliated Research Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA
2018 - 2019	Affiliated Research Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA
2013 - 2017	Post-Doctoral Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA

**INSTITUTIONAL, MANAGEMENT, AND ORGANIZATIONAL ACADEMIC ACTIVITIES**

Years	Type
2020 - present	Head of the Computational Analysis section within the Laboratory of Artificial Intelligence in Medical Imaging, LOGICIAN, Department of Neuroscience, Imaging and Clinical Sciences, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy
2019 - 2020	Member of the Department Board, Department of Neuroscience, Imaging and Clinical Sciences, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy
2019 - 2020	Member of the Joint Teachers-Students Commission, Degree in Environmental and Workplace Prevention Techniques, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy

**TEACHING ACTIVITY AT THE UNIVERSITY 'G. D'ANNUNZIO'**

Academic Year	Course	Italian Disciplinary Scientific Sector	Degree / Specialization Course	ECTS	Type
2019 - 2020	Optoelectronic Postural Evaluation	ING-INF/06	Physiotherapy	1	Assistant Professor Assignment
2019 - 2020	Diffuse Optical Imaging	FIS/07	PhD Degree, Neuroscience and Imaging	2	Assistant Professor Assignment
2019 - 2020	Physics	FIS/07	Geology	4	Assistant Professor Assignment
2019 - 2020	Elettromagnetism	FIS/07	Prevention Techniques in the Environment and in the Workplace	1	Assistant Professor Assignment
2019 - 2020	Information Processing Systems	ING-INF/05	Techniques of Cardiacirculatory Pathophysiology and Cardiovascular Perfusion	1	Assistant Professor Assignment
2018 - 2019	Diffuse Optical Imaging	FIS/07	PhD Degree, Neuroscience and Imaging	2	Assistant Professor Assignment

2018 - 2019	Elettromagnetism	FIS/07	Prevention Techniques in the Environment and in the Workplace	1	Assistant Professor Assignment
2018 - 2019	Information Processing Systems	ING-INF/05	Techniques of Cardiacirculatory Pathophysiology and Cardiovascular Perfusion	1	Assistant Professor Assignment
2018 - 2019	Applied Physics	FIS/07	Dental Care	2	Assistant Professor Assignment
2018 - 2019	Biomechanics	FIS/07	Specialization School, Oral Surgery		Free Assignment
2018 - 2019	Biomechanics	FIS/07	Dentistry and Dental Prosthesis		Expert
2018 - 2019	Ionizing Radiation and Medical Imaging	FIS/07	Specialization School, Radiodiagnostics		Free Assignment
2018 - 2019	Physics Exercises	FIS/07	Geology		Expert
2018 - 2019	Physical Methods Internship	FIS/07	Medicine and Surgery		Free Assignment
2017 - 2018	Physics Exercises	FIS/07	Geology		Free Assignment
2017 - 2018	Physics Exercises	FIS/07	Dentistry and Dental Prosthesis		Free Assignment
2017 - 2018	Physical Methods Internship	FIS/07	Medicine and Surgery		Free Assignment
2009 - 2013	Physical Methods Internship	FIS/07	Medicine and Surgery		Free Assignment

### ACTIVITIES FOR DOCTORAL DISSERTATIONS

Co-supervisor and Member of the Doctoral Commission			
Year	University	Candidate	Thesis Title
2019	University of l'Aquila	Stefania Lancia	Towards the new generation of functional NIRS systems for investigating prefrontal cortex functions
2020	Politecnico di Milano	Ileana Pirovano	Time domain near infrared spectroscopy for muscle and cerebral oxygenation monitoring

### PARTICIPATION IN JOURNAL EDITORIAL COMMITTEES

Role	Journal
Special Issue Editor	Biomedical Infrared Imaging: From Sensors to Applications - Sensors
Special Issue Editor	The Sensors for Biomedical Imaging - Sensors
Reviewer	Algorithms
Reviewer	Applied Optics
Reviewer	Behavioral and Brain Functions
Reviewer	Biomedical Physics and Engineering Express
Reviewer	Biomedical Signal Processing and Control

Reviewer	Computers in Human Behavior
Reviewer	IEEE Access
Reviewer	IEEE's Transactions on Affective Computing
Reviewer	IEEE Transactions in Biomedical Engineering
Reviewer	Behavioural Brain Research
Reviewer	Computational Intelligence and Neuroscience
Reviewer	Computer Methods and Programs in Biomedicine
Reviewer	IET Signal Processing
Reviewer	International Journal of Medical Informatics
Reviewer	Journal of Neural Engineering
Reviewer	Journal of Neuroscience Methods
Reviewer	Neuroimage
Reviewer	Neurophotonics
Reviewer	Plos One
Reviewer	Psychophysiology
Reviewer	Scientific Reports
Reviewer	Sensors
Reviewer	Sensors & Actuators
Reviewer	Symmetry

#### **INVOLVMENT IN CONGRESS ORGANIZATION**

<b>Year</b>	<b>Role</b>	<b>Congress</b>
2019	Chair of Session 'Acoustic and Optical Sensors'	Engineering in Medicine and Biology Conference, EMBC Berlin, Germany

#### **CONGRESS PARTICIPATION**

<b>Year</b>	<b>Congress</b>
2020	International Society for Magnetic Resonance in Medicine Conference, ISMRM Virtual Conference
2019	Engineering in Medicine and Biology Conference, EMBC Berlin, Germany
2019	Human Brain Mapping, HBM, Rome, Italy
2018	Functional Near Infrared Spectroscopy, fNIRS, Tokyo, Japan
2018	Gruppo Nazionale di Bioingegneria, GNB, Milan, Italy
2018	Italian functional Near Infrared Spectroscopy, ifNIRS, Milan, Italy
2017	IEEE Sensors, Glasgow, United Kingdom
2017	Functional Near Infrared Spectroscopy UK, fNIRS UK, London, United Kingdom
2016	Functional Near Infrared Spectroscopy, fNIRS, Paris, France
2014	Functional Near Infrared Spectroscopy, fNIRS, Montreal, Canada
2012	Functional Near Infrared Spectroscopy, fNIRS, London, United Kingdom

#### **INVITED TALKS**

<b>Year</b>	<b>Month</b>	<b>Title</b>	<b>Occasion and Place</b>
2020	February	fNIRS: Which Perspectives in Clinical Practice	Quantum IT, Rome, Italy
2019	September	Multimodal Evaluation of Brain Activity through Combined Wearable Electroencephalography and Functional Near Infrared Spectroscopy	Philips Medical Systems International BV, Best, Eindhoven, Netherlands
2019	August	High-Density Diffuse Optical Imaging of the Brain Cortex and Vasculature	University of Cardiff, Cardiff, United Kingdom



2019	July	Wearable, Fiber-less, Multi-Channel System for Continuous Wave Functional Near Infrared Spectroscopy Based on Silicon Photomultipliers Detectors and Lock-In Amplification	Engineering in Medicine and Biology Conference (EMBC), Berlin, Germany
2019	May	MRI-Guided Diffuse Optical Imaging of Cortical and Cerebrovascular Status	GIDRM Workshop on Integration of NMR and MRI with other Techniques in Brain Imaging, University 'G. D'Annunzio' of Chieti-Pescara, Chieti, Italy
2019	March	Functional Near Infrared Spectroscopy with Silicon Photomultipliers	IMEC, High Tech Campus, Eindhoven, Netherlands
2018	November	Photoplethysmographic Assessment of Peripheral Arterial Stiffness	Cajal Institute, Spanish National Research Council, Madrid, Spain
2018	June	Multimodal Neuroimaging with Functional Near Infrared Spectroscopy: Rationale and Applications	Joint Italian and French fNIRS meeting, Politecnico di Milano, Milano, Italy
2018	June	Diffuse Optical Imaging of Brain Activity: Principles and Multimodal Applications	University of Verona, Giugno 2018, Verona, Italia
2018	Maggio	Advanced Computation and Analysis of Multimodal Electroencephalography and Functional Near Infrared Spectroscopy	Netherlands Cancer Institute, Amsterdam, Netherlands
2017	November	Flexible Continuous Wave Functional Near Infrared Spectroscopy System Based on Silicon Photomultipliers: In-Vivo characterization of Sensorimotor Response	IEEE Sensors, Glasgow, United Kingdom
2015	May	Functional Near Infrared Spectroscopy and Fast Optical Signal Processing	Fast Optical Imaging Workshop, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana Champaign, Illinois, USA
2015	May	Near Infrared Imaging, Physics and Instrumentation, Fast Optical Imaging Workshop	Fast Optical Imaging Workshop, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana Champaign, Illinois, USA

### **BACKGROUND AND RESEARCH INTERESTS**

Dr. Chiarelli's research focuses on procedures and methods for medical imaging and neuroimaging. His interest is mainly focused on the study of the state and function of the brain through diffuse optical imaging, nuclear magnetic resonance and electroencephalography.

During the Ph.D., Dr. Chiarelli developed advanced skills in procedures and methods for medical images and neuroimaging. His research, in the period indicated, focused on the analysis of optical signals deriving from brain activity, both of vascular (Farroni et al., *Sci Rep* 2013; Costantini et al., *J Biom Opt* 2013) and neuronal origin (Chiarelli et al., *Neuroimage* 2013; Chiarelli et al., *Neuroimage* 2014).

Dr. Chiarelli worked as a Post-Doctoral Fellow at the Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana Champaign (UIUC), Urbana, Illinois, USA, from 2013 to 2017. The Beckman Institute for Advanced Science and Technology at UIUC is one of the most prestigious interdisciplinary research centers in the United States of America, as well as home to world leading laboratories in research on diffusive optical imaging for brain study and medical imaging via nuclear magnetic resonance. During his experience in the United States of America, Dr. Chiarelli has worked on several projects concerning high-density diffuse optical imaging and its comparison and integration with nuclear magnetic resonance imaging. During this period, he faced typical problems of neuroimaging methods based on sensors placed on the scalp and their integration with nuclear magnetic resonance images, such as co-registration with anatomical images (Chiarelli et al., *J Biomed Opt* 2015), movement noise removal (Chiarelli et al., *Neuroimage* 2015), and direct and inverse problems for the reconstruction of cortical activity in the source space (Chiarelli et al., *J Biomed opt* 2016). He also participated in the development of flexible optoelectronic systems for wireless monitoring of arterial and tissue oxygen saturation (Kim et al., *Sci Adv* 2016; Kim et al., *Advanced functional materials* 2017; Zhang et al., *Sci Adv* 2019). In addition, Dr. Chiarelli has been involved in cross sectional multimodal in vivo brain imaging studies with large sample sizes (Fabiani et al., *Psychophysiology* 2014; Tan et al., *Biol Psychol* 2016; Tan et al., *PLoS One* 2017; Chiarelli et al., *Neurophotonics* 2017; Chiarelli et al., *Neuroimage* 2017; Chiarelli et al., *J Cereb Blood Flow Metab* 2019; Chiarelli et al., *Photonics* 2019; Tan et al., *Neurobiol Aging* 2019; Kong et al., *Network Neuroscience* 2019). These studies, funded by major grants from the National Institutes of Health (NIH) and private US companies, aimed to evaluate the link between brain function metrics derived from optical and nuclear magnetic resonance imaging and pathophysiological states, for example associated with aging. This involvement has enhanced the skills of Dr. Chiarelli in the various methods for neuroimaging, as well as the ability to use descriptive and inferential statistics and to plan and conduct in vivo recordings for physiological and clinical research in humans.

From 2017 to 2020, Dr. Chiarelli has been an Assistant Professor in Applied and Medical Physics at the Department of Neuroscience, Imaging and Clinical Sciences, University G. d'Annunzio 'of Chieti-Pescara, Chieti, Italy. His position is funded by a European H2020 grant, called Advancing Smart Optical Imaging and Sensing for Health (ASTONISH). Part of the ASTONISH grant concerns the multimodal implementation, both from a hardware and software standpoint, of electroencephalography and functional near infrared spectroscopy (Chiarelli et al., *Review, Neurophotonics* 2017) as well as the multimodal implementation of electrocardiography and photoplethysmography in order to evaluate neurovascular coupling and cardiocirculatory status in physiological (e.g. related to aging) and pathological (e.g. associated with Alzheimer's disease, Perpetuini et al., *Entropy* 2019) states. During this research project, Dr. Chiarelli dealt with the validation of the developed instrumentation (Chiarelli et al., *Neurophotonics* 2017; Perpetuini et al., *Sensors* 2019; Maira et al., *Applied Sciences* 2020) and the software integration of the aforementioned methods through the use of differential models of neurovascular coupling (Croce et al., *J Neural Eng* 2017) as well as through multivariate and data-driven 'machine learning' approaches (Chiarelli et al., *J Neural Eng* 2018; Croce et al., *IEEE Trans Biomed Eng* 2019; Chiarelli et al., *Med Eng Phys* 2019). From 2020, Dr. Chiarelli is a tenure-track Assistant Professor in Applied and Medical Physics at the Department of Neuroscience, Imaging and Clinical Sciences, University G. d'Annunzio 'of Chieti-Pescara, Chieti, Italy. His research is and will be devoted to the development of novel methods to probe brain physiology with nuclear magnetic resonance and diffuse optical imaging.

Dr. Chiarelli, in collaboration with the Radiology Section of the Department of Neuroscience, Imaging and Clinical Sciences, University 'G. of Annunzio 'of Chieti-Pescara, Chieti, Italy, is currently applying 'machine learning 'and' deep learning 'methods to nuclear magnetic resonance images for diagnosis and clinical prognosis. This collaborative research has created a departmental laboratory on the topic called LOGICIAN, where Dr. Chiarelli is the head of the Computational Analysis Section.

Different software programs developed by Dr. Chiarelli in Matlab environment are constantly used by Italian and foreign University research groups.

Dr. Chiarelli has several collaborations with important national and international research groups.

**MAIN SCIENTIFIC COLLABORATIONS**

<b>Years</b>	<b>PI of the Research Group</b>	<b>Research Group Institution</b>	<b>Topic</b>	<b>Number of Joint Publications</b>
2019 - present	Prof. Alessandro Torricelli	Department of Physics, Politecnico di Milano, Milan, Italy	Collaboration on the integration of 'time-domain' diffuse optical imaging and magnetic resonance imaging	0
2019 - present	Prof. Antonio Belli	Institute of Inflammation and Ageing, University of Birmingham, Birmingham, United Kingdom	Collaboration on the use of diffusive optical imaging in severe head injury within intensive care	3
2019 - present	Prof. Richard Wise	Cardiff University Brain Research Imaging Centre (CUBRIC), University of Cardiff, Cardiff, United Kingdom; Department of Neuroscience, Imaging and Clinical Sciences, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy	Collaboration on the use of diffuse optical imaging and functional magnetic resonance for the evaluation of brain perfusion through transient hypoxia	0
2019 - present	Dr. Andrea Delli Pizzi	Radiology Section, Department of Neuroscience, Imaging and Clinical Sciences, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy	Collaboration on 'machine learning' and 'deep learning' methods applied to nuclear magnetic resonance radiological images for clinical diagnosis and prognosis	0
2018 - present	Prof. Massimo Caulo	Radiology Section, Department of Neuroscience, Imaging and Clinical Sciences, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy	Collaboration in progress on functional nuclear magnetic resonance imaging for the assessment of brain connectivity in prematurity, and associated neuropsychological prognosis, through the use of 'machine learning' methods	1
2017 - present	Prof. Costantino Giaconia	Department of Engineering, University of Palermo, Palermo, Italy	Collaboration on the use of silicon photomultipliers for near infrared functional spectroscopy (fNIRS)	2
2017 - present	Prof. Sergio Fantini	Department of Biomedical Engineering, Tufts	Collaboration on the quantitative mapping of the Effective Attenuation Coefficient	1

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		University, Boston, Massachusetts, USA	of the head and brain tissue through the use of high-density diffusive optical imaging	
2017 - present	Dr. Giorgio Fallica	Research and Development of ST-Microelectronics, Catania, Italy	Collaboration on the use of silicon photomultipliers for near infrared functional spectroscopy (fNIRS)	6
2017 - present	Prof. Filippo Zappasodi	Department of Neuroscience, Imaging and Clinical Sciences, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy	Collaboration on multimodal imaging with functional near-infrared spectroscopy (fNIRS) and electroencephalography (EEG)	11
2015 - present	Prof. John Rogers	Departments of Material Science and Engineering, Northwestern University, Evanston, Illinois, USA	Long term collaboration on the analysis of signals acquired through extensible, wireless and battery-free electronic systems, for the evaluation of the optical properties of the skin and the saturation of arterial and tissue oxygen in humans and animal models	3
2014 - present	Prof. Fabrice Wallois	Institut national de la santé et de la recherche médicale (INSERM), Université di Picardie Jules Verne, Amiens, Francia	Collaboration on diffuse optical tomography in premature infants within neonatal intensive care	1
2014 - present	Prof. Brad Sutton	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA	Long-term collaboration on the methodological integration of diffuse optical imaging and nuclear magnetic resonance	4
2013 - present	Prof. Gabriele Gratton	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA	Long-term collaboration on high density diffuse optical imaging and its integration with nuclear magnetic resonance, mainly for the study of the brain in aging	16
2012 - 2013	Prof. Mark Johnson	Birkbeck, University of London, London, United Kingdom	Collaboration on the use of functional near infrared spectroscopy for the study of brain functional activity in newborns	1

2012 - present	Prof. Arcangelo Merla	Department of Neuroscience, Imaging and Clinical Sciences, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy	Long-term collaboration on diffuse optical imaging and its integration with other imaging methods for the study of the brain and the evaluation of autonomic function, also through the use of 'machine learning' methods	32
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### LANGUAGE SKILLS

<b>Native Language</b>					
Italian					
<b>Other Languages</b>	<b>Comprehension</b>		<b>Speaking</b>		<b>Writing</b>
	<b>Listening</b>	<b>Reading</b>	<b>Interaction</b>	<b>Oral Production</b>	
English	C2	C2	C2	C2	C2
Livelli: A1 e A2: Basic User- B1 e B2: Independent User – C1 e C2: Proficient User Common European Framework of Reference for Languages					

### COMMUNICATION SKILLS

Excellent communication and relationship skills; excellent ability to work in a team gained in about ten years of research in national and international environments. High supervision capabilities.

### DIGITAL SKILLS

Self Assessment				
<b>Information Processing</b>	<b>Communication</b>	<b>Content Creation</b>	<b>Security</b>	<b>Problem Solving</b>
Expert user	Expert user	Expert user	Independent user	Expert user
<ul style="list-style-type: none"> <li>- Excellent knowledge of programming languages: Matlab, Python</li> <li>- Excellent knowledge of deep learning packages: Tensorflow</li> <li>- Good knowledge of programming languages: C, C ++, Fortran</li> <li>- Excellent ability to use tools dedicated to the analysis of signals and images for neuroimaging: SPM, NIRS-SPM, Homer2, FieldTrip, EEGLab</li> <li>- Good ability to use tools dedicated to the analysis of signals and images for neuroimaging: Fsl, Freesurfer</li> <li>- Excellent knowledge of statistical analysis packages: SPSS</li> <li>- Excellent ability to use languages for preparing texts: LaTeX</li> <li>- Excellent knowledge of Microsoft applications and the Office package: Word, Excel, PowerPoint.</li> </ul>				

### INFORMATION ON SCIENTIFIC PRODUCTION

#### Synthetic Information

Consistency of Scientific Production	
Total number of publications in indexed Journals Proceedings	50
Period	2013-2020

<b>Intensity of Scientific Production</b>	
Average number of indexed publications per year	6.25
Period	2013-2020

<b>Continuity of Scientific Production</b>	
Number of years of scientific production without interruption	8
Period	2013-2020

### Additional Information

Academic Age: **8** years (first publication in 2013)

Publications as first author in indexed Journals or Proceedings: **19/50 (38.0%)**

Publications as last author in indexed Journals: **2/46 (4.3%)**

Publications in indexed journals resulting from international collaborations: **22/46 (47.8%)**

Total Impact Factor: **196.138**

### SCIENTIFIC PUBLICATIONS

#### Publications in Indexed Peer-Reviewed Journals (in reverse chronological order)

\* *underlines first, last or corresponding author*

1. **Chiarelli AM\***, Croce P, Assenza G, Merla A, Granata G, Giannantoni NM, Pizzella V, Tecchio F, Zappasodi F. Electroencephalography-derived prognosis of functional recovery in acute stroke through Machine Learning approaches. *International Journal of Neural System*. 2020; doi.org/10.1142/S0129065720500677
2. Forcione M, **Chiarelli AM**, Perpetuini D, Davies D, O'Halloran P, Hacker D, Merla A, Belli A. Tomographic task-related functional near-infrared spectroscopy in acute sport-related concussion: an observational case study. *Molecular Neurobiology*. 2020, 21, 6273; doi.org/10.3390/ijms21176273.
3. Cardone D, Perpetuini D, Filippini C, Spadolini E, Mancini L, **Chiarelli AM**, Merla A. Driver stress evaluations by means of thermal imaging: a supervised machine learning approach based on ECG signal. *Applied Sciences*. 2020, 10, 5673; doi.org/10.3390/app10165673.
4. Forcione M, Yakoub KM, **Chiarelli AM**, Perpetuini D, Merla M, Sun R, Sawosz P, Belli A, Davies DJ. Dynamic contrast-enhanced near-infrared spectroscopy using indocyanine green on moderate and severe traumatic brain injury: a prospective observational study. *Quantitative Imaging in Medicine and Surgery*. 2020, 10: 2085-2097 ; doi.org/10.21037/qims-20-742.
5. Parisi G, Mazzi C, Colombari E, **Chiarelli AM**, Metzger BA, Marzi CA, Savazzi S. Spatiotemporal dynamics of attentional orienting and reorienting revealed by fast optical imaging in occipital and parietal cortices. *NeuroImage*. 2020, 14, 117244.
6. Toto L, D'Aloisio R, **Chiarelli AM**, Di Antonio L, Evangelista F, D'Onofrio G, Merla A, Parravano M, Di Marzio G, Mastropasqua R. A custom-made semi-automatic analysis of retinal non-perfusion areas after intravitreal dexamethasone implant for diabetic macular edema. *Translational Vision Science and Technology*. 2020, 9, 13; doi.org/10.1167/tvst.9.7.13.
7. **Chiarelli AM\***, Perpetuini D, Croce P, Greco G, Mistretta L, Rizzo R, Vinciguerra V, Romeo MF, Zappasodi F, Merla A, Fallica PG, Edlinger G, Ortner R, Giaconia GC. Fiberless, Multi-Channel fNIRS-EEG System Based on Silicon Photomultipliers: Towards Sensitive and Ecological Mapping of Brain Activity and Neurovascular Coupling. *Sensors*. 2020, 20, 2831; doi:10.3390/s20102831.

8. Filippini C, Perpetuini D, Cardone D, **Chiarelli AM**, Merla A. Thermal infrared imaging-based affective computing and its application to facilitate human robot interaction: a review. *Applied Sciences*. 2020; 10, 2924.
9. Forcione M, **Chiarelli AM**, Davies DJ, Perpetuini D, Sawosz P, Merla A, Belli A. Cerebral perfusion and blood-brain barrier assessment in brain trauma using contrast-enhanced near-infrared spectroscopy with indocyanine green: a review. *J Cereb Blood Flow Metab*. 2020; 0271678X20921973.
10. Perpetuini D, **Chiarelli AM**, Cardone D, Rinella S, Massimino S, Bianco F, Bucciarelli V, Vinciguerra V, Fallica G, Perciavalle V, Gallina S, Merla A. Photoplethysmographic prediction of the Ankle-Brachial Pressure Index through a Machine Learning approach. *Applied Sciences*. 2020; 10, 2137. doi:10.3390/app10062137.
11. Maira G, **Chiarelli AM**, Brafa S, Libertino S, Fallica G, Merla A, Lombardo S. Imaging system based on Silicon Photomultipliers and Light Emitting Diodes for functional Near Infra-Red Spectroscopy. *Applied Sciences*. 2020; 10: 1068. doi: doi.org/10.3390/app10031068.
12. Perpetuini D, **Chiarelli AM**, Maddiona L, Rinella S, Bianco F, Bucciarelli V, Gallina S, Perciavalle V, Vinciguerra V, Merla A, Fallica G. Multi-site photoplethysmographic and electrocardiographic system for arterial stiffness and cardiovascular status assessment. *Sensors*. 2019; 19: 5570. doi: doi.org/10.3390/s19245570.
13. Kong TS, Gratton C, Low KA, Tan CH, **Chiarelli AM**, Fletcher MA, Zimmerman B, Maclin EL, Sutton BP, Gratton G, Fabiani M. Age-related differences in functional brain network segregation are consistent with a cascade of cerebrovascular, structural and cognitive effects. *Network Neuroscience*. 2019; 4: 89-114. doi: doi.org/10.1162/netn\_a\_00110.
14. Tan CH, Low KA, **Chiarelli AM**, Fletcher MA, Navarra R, Burzynska AZ, Kong TS, Zimmerman B, Maclin E, Sutton BP, Gratton G & Fabiani M. Optical measures of cerebral arterial stiffness are associated with White Matter Signal Abnormalities and cognitive performance in normal aging. *Neurobiol Aging*. 2019; 84: 200-207. doi: doi.org/10.1016/j.neurobiolaging.2019.08.004.
15. **Chiarelli AM\***, Perpetuini D, Filippini C, Cardone D, Merla A. Differential Pathlength Factor in continuous wave functional Near-Infrared Spectroscopy: reducing hemoglobin's cross talk in high-density recordings. *Neurophotonics*. 2019; 6: 035005. doi: 10.1117/1.NPh.6.3.035005.
16. **Chiarelli AM\***, Bianco F, Perpetuini D, Bucciarelli V, Filippini C, Cardone D, Zappasodi F, Gallina S, Merla A. Data-driven assessment of cardiovascular ageing through multisite photoplethysmography and electrocardiography. *Med Eng Phys*. 2019; 73: 39-50. doi: 10.1016/j.medengphy.2019.07.009.
17. **Chiarelli AM\***, Low KA, Maclin EL, Fletcher MA, Kong T, Zimmerman B, Tan CH, Sutton BP, Fabiani M, Gratton G. The optical Effective Attenuation Coefficient as an informative measure of brain health in aging. *Photonics*. 2019; 6: 79. doi: doi.org/10.3390/photonics6030079.
18. Zhang H, Gutruf P, Meacham K, Montana MC, Zhao X, **Chiarelli AM**, Vázquez-Guardado A, Norris A, Lu L, Guo Q, Xu C. Wireless, battery-free optoelectronic systems as subdermal implants for local tissue oximetry. *Sci Adv*. 2019; 5: eaaw0873. doi: 10.1126/sciadv.aaw0873.
19. Perpetuini D, Cardone D, Filippini C, **Chiarelli AM\***, Merla A. Modelling impulse response function of functional Infrared Imaging for General Linear Model analysis of autonomic activity. *Sensors*. 2019; 19: 849. doi: doi.org/10.3390/s19040849.
20. Perpetuini D, Cardone D, **Chiarelli AM**, Filippini C, Croce P, Zappasodi F, Rotunno L, Anzelotti N, Zito M, Merla A. Autonomic impairment in Alzheimer's Disease is revealed by complexity analysis of functional Thermal Imaging signals during cognitive tasks. *Physiol Meas*. 2019; 40: 034002. doi: doi.org/10.1088/1361-6579/ab057d.

21. Perpetuini D, **Chiarelli AM**, Cardone D, Filippini C, Bucco R, Zito M, Merla A. Complexity of frontal cortex fNIRS can support Alzheimer Disease diagnosis in memory and visuo-spatial tests. *Entropy*. 2019; 21: 26. doi: doi.org/10.3390/e21010026.
22. **Chiarelli AM\***, Mahmoudzadeh M, Low KA, Maclin EL, Kongolo G, Goudjil S, Fabiani M, Wallois F, Gratton G. Assessment of cerebrovascular development and intraventricular hemorrhages in preterm infants with optical measures of the brain arterial pulse wave. *J Cereb Blood Flow Metab*. 2019; 39: 466-80. doi: doi.org/10.1177/0271678X17732694.
23. Croce P, Zappasodi F, Marzetti L, Merla A, Pizzella V, **Chiarelli AM\***. Deep Convolutional Neural Networks for feature-less automatic classification of Independent Components in multi-channel electrophysiological brain recordings. *IEEE Trans Biomed Eng*. 2019; 66: 2372-2380. doi: 10.1109/TBME.2018.2889512.
24. **Chiarelli AM\***, Verrotti A, Caulo M, Merla A, Chiarelli F. Near infrared investigation of the infants' brain in clinical setting: principles, applications and future perspectives. *Lancet Child & Adolescent Health*. 2018; 2: 626-628. doi: doi.org/10.1016/S2352-4642(18)30206-2.
25. **Chiarelli AM\***, Croce P, Merla A, Zappasodi F. Deep Learning for hybrid EEG-fNIRS Brain-Computer Interface: application to motor imagery classification. *J Neural Eng*. 2018; 15: 036028. doi: doi.org/10.1088/1741-2552/aaaf82.
26. **Chiarelli AM\***, Libertino S, Zappasodi F, Mazzillo M, Di Pompeo F, Merla A, Lombardo S, Fallica G. Characterization of a fiber-less, multi-channel optical probe for Continuous Wave functional Near Infrared Spectroscopy based on Silicon Photomultipliers detectors: In-Vivo assessment of primary sensorimotor response. *Neurophotonics*. 2017; 4: 035002, doi: 10.1117/1.NPh.4.3.035002.
27. **Chiarelli AM\***, Fletcher MA, Tan CH, Low KA, Maclin E, Zimmerman B, Kong T, Gorsucha A, Gratton G, Fabiani M. Individual differences in regional cortical volumes are associated with regional optical measures of arterial elasticity in healthy adults. *Neuroimage*. 2017; 162: 199–213. doi: doi.org/10.1016/j.neuroimage.2017.08.064.
28. **Chiarelli AM\***, Zappasodi F, Di Pompeo F, Merla A. Simultaneous functional Near Infrared Spectroscopy and Electroencephalography for monitoring of human brain activity and oxygenation: A review. *Neurophotonics* 2017, 4: 041411, doi: 10.1117/1.NPh.4.4.041411.
29. Croce P, Zappasodi F, Merla A, **Chiarelli AM\***. Exploiting neurovascular coupling: A Bayesian Sequential Monte Carlo approach applied to simulated EEG fNIRS data. *J Neural Eng*. 2017; 14: 046029. doi: 10.1088/1741-2552/aa7321.
30. **Chiarelli AM\***, Maclin EL, Low KA, Fantini S, Fabiani M, Gratton G. Low resolution mapping of the effective attenuation coefficient of the human head: A multi-distance approach applied to high-density optical recordings. *Neurophotonics*. 2017; 4: 021103, doi: 10.1117/1.NPh.4.2.021103.
31. Gratton G, **Chiarelli AM**, Fabiani M. From brain to blood vessels and back: A non-invasive optical imaging approach. *Neurophotonics*. 2017; 4, 031208. doi:10.1117/1.NPh.4.3.031208.
32. Tan CH, Low KA, Kong T, Fletcher MA, Zimmerman B, Maclin EL, **Chiarelli AM**, Gratton G, Fabiani M. Mapping cerebral pulse pressure and arterial compliance over the adult lifespan with Optical Imaging. *PLoS One*. 2017; 12: e0171305. doi:10.1371/journal.pone.0171305.
33. Kim J, Gutruf P, **Chiarelli AM**, Heo SY, Cho K, Xie Z, Banks A, Han S, Jang K-I, Lee JW, Lee K-T, Feng X, Huang Y, Fabiani M, Gratton G, Paik U, Rogers JA. Miniaturized battery-free wireless systems for wearable pulse oximetry. *Advanced functional materials*. 2017; 27: 1604373. doi: 10.1002/adfm.201604373.



34. Seymour JL, Low KA, Maclin EL, **Chiarelli AM**, Mathewson KE, Fabiani M, Gratton G, Dye M. Reorganization of neural systems mediating peripheral visual selective attention in the deaf: An optical imaging study. *Hear Res.* 2017; 343: 162-175. doi: doi.org/10.1016/j.heares.2016.09.007.
35. Kim J, Salvatore GA, Araki H, **Chiarelli AM**, Xie Z, Banks A, Sheng X, Liu Y, Lee JW, Jang KI, Heo SY, Cho K, Luo H, Zimmerman B, Kim J, Yan L, Feng X, Xu S, Fabiani M, Gratton G, Huang Y, Paik U, Rogers JA. Battery-free, stretchable optoelectronic systems for wireless optical characterization of the skin. *Sci Adv* 2016; 2: e1600418. doi: 10.1126/sciadv.1600418.
36. Tan CH, Low KA, Schneider-Garces N, Zimmerman B, Fletcher MA, Maclin EL, **Chiarelli AM**, Gratton G, Fabiani M. Optical measures of changes in cerebral vascular tone during voluntary breath holding and a Sternberg Memory task. *Biol Psychol.* 2016; 118: 184-194. doi: doi.org/10.1016/j.biopsycho.2016.05.008.
37. **Chiarelli AM\***, Maclin EL, Low KA, Mathewson KE, Fabiani M, Gratton G. Combining energy and Laplacian regularization to accurately retrieve the depth of brain activity of diffuse optical tomographic data. *J Biomed Opt.* 2016; 21: 036008. doi: 10.1117/1.JBO.21.3.036008.
38. **Chiarelli AM\***, Maclin EL, Fabiani M, Gratton G. A kurtosis-based wavelet algorithm for motion artifact correction of fNIRS data. *Neuroimage* 2015; 112: 128-137. doi: doi.org/10.1016/j.neuroimage.2015.02.057.
39. **Chiarelli AM\***, Maclin EL, Low KA, Fabiani M, Gratton G. Comparison of procedures for co-registering scalp-recording locations to anatomical magnetic resonance images. *J Biomed Opt.* 2015; 20: 016009. doi: 10.1117/1.JBO.20.1.016009.
40. Fabiani M, Low KA, Tan CH, Zimmerman B, Fletcher MA, Schneider-Garces N, Maclin EL, **Chiarelli AM**, Sutton BP, Gratton G. Taking the pulse of aging: Mapping pulse pressure and elasticity in cerebral arteries with optical methods. *Psychophysiology.* 2014; 51: 1072-1088. doi: doi.org/10.1111/psyp.12288.
41. **Chiarelli AM\***, Romani GL, Merla A. Fast Optical Signals in the sensorimotor cortex: General Linear Convolution Model applied to multiple source-detector distance-based data. *Neuroimage.* 2014; 85: 245-254. doi: doi.org/10.1016/j.neuroimage.2013.07.021.
42. Ferri F, Costantini M, Salone A, Di Iorio G, Martinotti G, **Chiarelli AM**, Merla A, Di Giannantonio M, Gallese V. Upcoming tactile events and body ownership in schizophrenia. *Schizophr Res.* 2014; 152: 51-57. doi: doi.org/10.1016/j.schres.2013.06.026.
43. Farroni T, **Chiarelli AM**, Lloyd-Fox S, Massaccesi S, Merla A, Di Gangi V, Mattarello T, Faraguna D, Johnson MH. Infant cortex responds to other humans from shortly after birth. *Sci Rep.* 2013; 3: 2851. doi: 10.1038/srep02851.
44. Ferri F, **Chiarelli AM**, Merla A, Gallese V, Costantini M. The body beyond the body: expectation of a sensory event is enough to induce ownership over a fake hand. *Proc Biol. Sci* 2013; 280: 20131-140. doi: 10.1098/rspb.2013.1140.
45. Costantini M, Di Vacri A, **Chiarelli AM**, Ferri F, Romani GL, Merla A. Studying social cognition using near-infrared spectroscopy: the case of social Simon effect. *J Biom Opt.* 2013; 18: 025005. doi: 10.1117/1.JBO.18.2.025005.
46. **Chiarelli AM\***, Di Vacri A, Romani GL, Merla A. Fast Optical signal in visual cortex: improving detection by General Linear Convolution Model. *Neuroimage.* 2013; 66: 194-202. doi.org/10.1016/j.neuroimage.2012.10.047.

**Publications in Indexed Peer-Reviewed Proceedings (in reverse chronological order)**

\* *underlines first, last or corresponding author*

1. **Chiarelli AM\***, Perpetuini D, Mistretta L, Greco G, Rizzo R, Vinciguerra V, Romeo MF, Merla A, Fallica PG, Giaconia GC. Wearable, fiber-less, multi-channel system for continuous wave functional Near Infra-Red Spectroscopy based on Silicon Photomultipliers detectors and lock-in amplification. 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC). 2019: 60-66. IEEE. doi: 10.1109/EMBC.2019.8857206.
2. Perpetuini D, **Chiarelli AM**, Vinciguerra V, Vitulli P, Rinella S, Cardone D, Bianco F, Perciavalle V, Gallina S, Fallica G, Merla A. Integrated multi-channel PPG and ECG system for cardiovascular risk assessment. In Multidisciplinary Digital Publishing Institute Proceedings. 2019; 27: 8. doi: doi.org/10.3390/proceedings2019027008.
3. Vinciguerra V, Ambra E, Maddiona L, Romeo, M, Mazzillo M, Rundo F, Fallica G, di Pompeo F, **Chiarelli AM**, Zappasodi F, Merla A, Busacca A, Guarino S, Parisi A , Pernice. PPG/ECG multisite combo system based on SiPM technology. In 4th National Conference on Sensors. 2018; 353-360.
4. **Chiarelli AM\***, Libertino S, Zappasodi F, Mazzillo M, Di Pompeo F, Merla A, Lombardo S and Fallica G. Flexible CW-fNIRS system based on Silicon Photomultipliers: in-vivo characterization of sensorimotor response. In IEEE Sensors. 2017; 1-3. doi: 10.1109/ICSENS.2017.8234434.

**Abstracts and Poster Presentations in Congresses (in reverse chronological order)**

\* *underlines first, last or corresponding author*

1. Filippini C, Perpetuini D, Cardone D, **Chiarelli AM**, Merla A. Thermal infrared Imaging and artificial intelligence techniques can support Alzheimer disease diagnosis. AIXIA, 19<sup>th</sup> International Conference of the Italian Association for Artificial Intelligence, November 2020, Virtual Conference.
2. Forcione M, **Chiarelli AM**, Perpetuini P, Davies DJ, O'Halloran P, Merla A, Belli A. Brain activation pattern in acute sport-related concussion using task-related functional near-infrared spectroscopy: a feasibility study. 6th International Consensus Conference on Concussion in Sport. October 2020, Paris, France.
3. Filippini C, Cardone D, **Chiarelli AM**, Perpetuini D, Amerio P, Merla A. Automated convolutional neural network approach for discriminating systemic sclerosis on the basis of hand thermal pattern. 15th Quantitative InfraRed Thermography Conference. July 2020, Porto, Portugal.
4. Filippini C, Cardone D, Perpetuini D, Chiarelli AM, Petitto LA, Merla A. Thermal infrared imaging reveals that 6-12 month-old babies show different autonomic response to interaction with robot and avatar. 15th Quantitative InfraRed Thermography Conference. July 2020, Porto, Portugal..
5. Forcione M, Zimmerman B, **Chiarelli AM**, Low K, Davies DJ, Belli A, Fabiani M, Gratton G. A method to perform optical brain reconstruction in complex clinical environments: a prospective study on healthy volunteers. fNIRS UK, September 2019, Birmingham, United Kingdom.
6. Forcione M, Yakoub K, **Chiarelli AM**, Perpetuini D, Merla A, Sawosz P, Liebert A, Belli A, Davies DJ. Dynamic contrast-enhanced near-infrared spectroscopy using indocyanine green on moderate and severe traumatic brain injury: an observational study. fNIRS UK, September 2019, Birmingham, United Kingdom.
7. Maira G, Mazzillo M, Libertino S, Merla A, **Chiarelli AM**, Fallica G, Lombardo S. Advantages of the use of silicon photomultipliers for continuous wave functional near-infrared spectroscopy of the human brain cortex. Italian National Conference on the Physics of Matter (FISMAT), October 2019, Catania, Italy.

8. Perpetuini D, **Chiarelli AM**, Vinciguerra V, Vitulli P, Rinella S, Cardone D, Perciavalle V, Gallina S, Fallica G, Merla A. Integrated multi-channel PPG and ECG system for cardiovascular risk assessment. International Workshop on Advanced Infrared Technology and Applications (AITA), September 2019, Florence, Italy.
9. Parisi G, Mazzi C, Colombari E, Metzger BA, **Chiarelli AM**, Savazzi S, Marzi CA. Neural dynamics of attentional cueing revealed by fast optical imaging. Organization for Human Brain Mapping (OHBM), June 2019, Rome, Italy.
10. Croce P, Zappasodi F, Marzetti L, Merla A, Pizzella V, **Chiarelli AM\***. Deep convolutional neural networks for automatic classification of electroencephalographic and magnetoencephalographic independent components. Organization for Human Brain Mapping (OHBM), June 2019, Rome, Italy.
11. Parisi G, Mazzi C, Colombari E, Metzger BA, **Chiarelli AM**, Savazzi S, Marzi CA. Disentangling orienting and reorienting attentional dynamics by means of fast optical imaging. European Workshop on Cognitive Neuropsychology, January 2019, Bressanone, Italy.
12. Giaconia C, Greco G, Mistretta L, Rizzo R, Merla A, **Chiarelli AM**, Zappasodi F, Edlinger G. Functional near infrared spectroscopy system validation for simultaneous EEG-fNIRS measurements. Apples (Applications in Electronics Pervading Industry, Environment and Society) 2018, September 2018, Pisa, Italy.
13. **Chiarelli AM\***, Croce P, Zappasodi F, Filippini C, Perpetuini D, Cardone D, Rotunno L, Anzoletti N, Zito M, Merla A. Neurovascular coupling assessment during clinical tests for early Alzheimer Disease diagnosis: a multimodal EEG-fNIRS and Deep Learning approach. fNIRS 2018, October 2018, Tokyo, Japan.
14. Kong T, Gratton C, Low K, Tan CH, **Chiarelli AM**, Fletcher M, Zimmerman B, Maclin E, Gratton G, Fabiani M. Giving a sign to functional connectivity: its relationship to age, arterial elasticity and white matter integrity. SPR, Society for Psychophysiological Research, October 2018, Wien, Austria.
15. Costantino G, Greco G, Mistretta L, Rizzo R, Merla A, **Chiarelli AM**, Zappasodi F and Edlinger G. Wireline fNIRS System for Brain Monitoring Applications: Electronic Systems and Applications (Sistemi elettronici e applicazioni). Società Italiana di Elettronica (SIE), June 2018, Naples, Italy.
16. **Chiarelli AM\***, Croce P, Merla A, Zappasodi F. Motor imagery classification through multimodal EEG-fNIRS recordings and Deep Learning classifier. GNB, June 2018, Milan, Italia
17. **Chiarelli AM\***, Libertino S, Zappasodi F, Mazzillo M, Lombardo S, Fallica G, Merla A. Characterizing Silicon Photomultipliers for optical monitoring of human brain activity: towards wearable, whole-head, high-density EEG-fNIRS systems. GNB, June 2018, Milan, Italy.
18. Libertino S, **Chiarelli AM**, Mazzillo M, Maira G, Zappasodi F, Di Pompeo F, Merla A, Fallica G, Lombardo S. Silicon photomultipliers for continuous-wave functional near infra-red spectroscopy: system characterization and in vivo tests. Biosensor, June 2018, Miami, USA.
19. **Chiarelli AM\***, Croce P, Merla A, Zappasodi F. Improving EEG-fNIRS SNR through a neurovascular coupling model and Particle Filter. Organization for Human Brain Mapping (OHBM), June 2018, Singapore.
20. **Chiarelli AM\***, Croce P, Merla A, Zappasodi F. Motor imagery Brain Computer Interface: increasing classification outcome by means of simultaneous EEG-fNIRS recordings and Deep Learning classifiers. Organization for Human Brain Mapping (OHBM), June 2018, Singapore.
21. Maira G, **Chiarelli AM**, Libertino S, Mazzillo M, Zappasodi F, Di Pompeo F, Merla A., Fallica G, Lombardo S. Silicon Photomultipliers for CW-fNIRS. Fotonica, May 2018, Lecce, Italy.

22. **Chiarelli AM\***, Libertino S, Zappasodi F, Mazzillo M, Di Pompeo F, Merla A, Lombardo S, Fallica G. Silicon Photomultipliers application to CW-fNIRS: in-vivo system performances characterization. 4 Convegno Nazionale Sensori, February 2018, Catania, Italy.
23. Vinciguerra V, Emilio A, Madionna L, Romeo M, Mazzillo M, Rundo F, Fallica G, Di Pompeo F, **Chiarelli AM**, Zappasodi F, Merla A, Busacca A, Guarino S, Parisi A, Pernice R. PPG/ECG Multisite Combo System Based on SiPM Technology. 4 Convegno Nazionale Sensori, February 2018, Catania, Italy.
24. Kong T, Low K, **Chiarelli AM**, Fletcher M, Tan CH, Zimmerman B, Maclin E, Gratton G, Fabiani M. Illuminating age-related resting state network differences using whole-head near-infrared optical imaging, SPR, Society for Psychophysiological Research, September 2017, Minneapolis, USA.
25. **Chiarelli AM\***, Croce P, Zappasodi F, Merla A. Deep Learning for multimodal EEG-fNIRS brain computer interface: application to motor imagery classification. fNIRS UK 2017, London, United Kingdom.
26. **Chiarelli AM\***, Maclin E, Low K, Fabiani M, Gratton G. Mapping the effective attenuation coefficient of the human head: A multidistance approach applied to high-density optical recordings. fNIRS, October 2016. Parigi, France.
27. **Chiarelli AM\***, Fletcher M, Maclin E, Low K, Fabiani M, Gratton G. Regional optical measures of cerebrovascular status associated with cortical volume in healthy aging. fNIRS, October 2016. Paris, France.
28. Fletcher MS, Low KA, Tan C, Kong T, Zimmerman B, Schneider-Garces N, Mathewson KE, Burton CR, Sutton BP, **Chiarelli AM**, Maclin E, Gratton G, Fabiani M. The effects of fitness on subcortical brain anatomy and cognition across the life span. Program No. 88.03. 2014 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, USA.
29. **Chiarelli AM\***, Maclin EL, Low KA, Mathewson KE, Fabiani M, Gratton G. A Comparison of procedures for co-registering scalp-recording locations to anatomical magnetic resonance images. fNIRS 2014, Montreal, Canada.
30. Seymour JL, **Chiarelli AM**, Fabiani M, Gratton G, Fletcher MA, Low K, Maclin E, Mathewson K, Dye M. Enhanced functional connectivity between V1 and multimodal cortex in congenitally, profoundly deaf adults revealed by time-lagged cross- correlation of the “fast” optical signal. Society for Neuroscience Annual Meeting, March 2014, Washington D.C., USA.
31. Seymour JL., Fabiani M, Gratton G, Low KA, Maclin E, Mathewson K, **Chiarelli AM**, Dye M. Enhanced recruitment of RH auditory association cortex in the deaf predicts visual task performance. 7th Annual inter-Science of Learning Centers Conference, Marzo 2014, University of Pittsburgh/Carnegie Mellon University, Pittsburgh, PA, USA.
32. Mathewson KE, Low KA, Schneider-Garces N, **Chiarelli AM**, Tan CH, Kong TS, Burton CR, Fletcher MA, Zimmerman B, Sutton BP, MaclinEL, Fabiani M, Gratton G. Retinotopic visual mapping of brain oxygenation and neuronal activity using simultaneous fast and slow near-infrared optical brain imaging in humans. *Journal of Vision*, 2014: 14, 1420.
33. Tan CH, Low KA, Schneider-Garces N, Fletcher M., **Chiarelli AM**, Zimmerman B, Maclin EL, Gratton G, Fabiani M. Measuring vascular tone in the brain using optical imaging during a sternberg memory task. *Psychophysiology*, 2014: 51, 33.
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**Book Chapters (in reverse chronological order)**

1. Giaconia C, Greco G, Mistretta L, Rizzo R, Merla A, **Chiarelli AM**, Zappasodi F, Edlinger G. Functional Near Infrared Spectroscopy System Validation for simultaneous EEG-FNIRS measurements. In Applications in Electronics Pervading Industry, 2019, Environment and Society
2. Vinciguerra V, Ambra E, Maddiona L, Romeo M, Mazzillo M, Rundo F, Fallica G, Di Pompeo F, **Chiarelli AM**, Zappasodi F, Merla A, Busacca A, Guarino S, Parisi A, Pernice R. PPG/ECG Multisite Combo System Based on SiPM Technology: An analysis of chemosensory afferents and the projection pattern in the central nervous system. In Sensors CNS2018 Lecture Notes in Electrical Engineering, 2018, Vol 539 Springer, Cham Editors Andò B. et al.

Chieti, 30.10.2020

A handwritten signature in black ink, appearing to read 'AM Chiarelli', written in a cursive style.