PERSONAL INFORMATION

Last Name	CHIARELLI
First Name	Antonio Maria
Date of Birth	18/01/1985
Nationality	Italian Green Card owner, United States of America from 2014 to 2017
E-mails	antonio.chiarelli@unich.it; chiarell@illinois.edu
ORCID	orcid.org/0000-0002-5347-8417
Scopus Page	https://www.scopus.com/authid/detail.uri?authorId=55501906000
Google Scholar	https://scholar.google.com/citations?user=LCtieCsAAAAJ&hl=it&oi=ao
University Department Personal Page	https://www.dnisc.unich.it/visualizza.php?type=persona&id=609

ACADEMIC POSITION

Qualification	Associate Professor of Applied Physics
Date of Employment	01/10/2023
University and Department of Affiliation	University 'G. d'Annunzio' of Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (DNISC)
Place	Institute for Advanced Biomedical Technologies (ITAB), Via Luigi Polacchi, 13 - 66100 Chieti, Italy

EDUCATION

Year of graduation	**Qualification**	**Location**
2013	PhD in Functional Neuroimaging	University 'G. d'Annunzio' di Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (DNISC), Italy
2009	Master's Degree in Physics Engineering	Polytechnic of Milan, Department of Physics, , Milan, Italy
2006	Bachelor's Degree in Physics Engineering	Polytechnic of Milan, Department of Physics, , Milan, Italy

SCIENTIFIC AND PROFESSIONAL HISTORY

Year	Role	Institute/Center	Project/Other Information
2023-present	Associate Professor of Applied and Medical Physics	University 'G. d'Annunzio' di Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (DNISC), Italy	Development of novel methods to probe brain physiology with Magnetic Resonance and Diffuse Optical Imaging
2020 - 2023	Tenure-Track Assistant Professor of Applied and Medical Physics	University 'G. d'Annunzio' di Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (DNISC), Italy	Development of novel methods to probe brain physiology with Magnetic Resonance and Diffuse Optical Imaging
2018 - 2022	Scientific Consultant	Next2U s.r.l.	Development and sale of hardware and software systems for non-invasive monitoring of cardiovascular status and brain activity
2018 - present	Affiliated Research Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA	Methods development for high-density diffusive optical imaging and its integration with structural and functional magnetic resonance imaging
2017 - 2020	Fixed-Term Assistant Professor of Applied and Medical Physics	University 'G. d'Annunzio' di Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (DNISC), Italy	Multimodal brain imaging with electroencephalography and functional near infrared spectroscopy
2013 - 2017	Post-Doctoral Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA	Methods development for high-density diffusive optical imaging and its integration with structural 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 (DNISC), Italy	Study of cortical activity with functional near infrared optical imaging

MEMBER OF SCIENTIFIC SOCIETES

Period	Scientific Society
2020 - present	International Society of Magnetic Resonance in Medicine (ISMRM)
2019 - 2022	Organization for Human Brain Mapping
2019 - 2023	IEEE Society (N. 95397142)
2019 - 2023	IEEE Engineering in Medicine and Biology Society (N. 95397142)
2018 - 2023	Gruppo Nazionale di Bioingegneria (GNB)
2012 - 2022	Society for functional Near-Infrared Spectroscopy (SfNIRS)

TITLES AND AWARDS

Year	Title/Award
2025	Qualified to the position of Full Professor for the Italian national academic competition sector 02 / D1- Applied Physics, Didactics and History of Physics: 07-03-2025/07-03-2037.
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.
2019	First author of one of the most cited articles of the Journal of Neural Engineering in the period 2018-2019
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
2014	Young Investigator Award, fNIRS Conference, Montreal, Canada
2013	Beckman Institute Post-Doctoral Fellow, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA

RESEARCH GRANTS

Project	**Hybrid PET-MRI to simultaneously probe brain metabolism and cerebrovascular function in neurodegenerative diseases**
Period	2023-2025
Funding Agency	Italian Ministry of University and Research
Main Host	Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara
Project Duration	24 months
Total Funding	*€ 234.320*
Funding	*€ 113.585*
Role	Co- Principal Investigator and Responsible for the Research Unit

Project	**Diffuse Optics and Magnetic Resonance Imaging for the Multimodal Assessment of Brain Neuronal, Hemodynamic and Metabolic activity**
Period	2024-2025
Funding Agency	European Union, Italy's recovery and resilience plan
Host	Department of Neuroscience, Imaging and Clinical Sciences. G.

	D'Annunzio University of Chieti-Pescara
Project Duration	12 months
Funding	€ 399.988
Role	Principal Investigator

Project	**Mapping Mitochondrial Function and Oxygen Metabolism in the Human Brain with Magnetic Resonance Imaging**
Period	2023-2025
Funding Agency	Italian Ministry of University and Research
Main Host	Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara
Project Duration	24 months
Total Funding	€ 199.520
Funding	€ 139.260
Role	Principal Investigator

Project	**Innovation Ecosystem: Innovation, digitalisation and sustainability for the diffused economy in Central Italy (Vitality)**
Period	2022-2025
Funding Agency	European Union, Italy's recovery and resilience plan
Host	Università degli Studi 'G. d'Annunzio' di Chieti-Pescara, Chieti, Italia
Project Duration	36 mesi
Funding	€ 9.590.192
Role	Collaborating researcher

Project	**Advanced Artificial Intelligence for Brain Computer Interface**
Period	2022-2023
Funding Agency	MindPortal
Host	Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara
Project Duration	12 months
Funding	€ 46.000
Role	Principal Investigator

Project	**Multimodal Brain Computer Interface with Optical imaging, Electroencephalography and Advanced Artificial Intelligence**
Period	2021-2022
Funding Agency	MindPortal
Host	Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara
Project Duration	12 months
Funding	€ 44.000
Role	Principal Investigator

Project	**Study of perfusion patterns as a biomarker of brain development in premature infants**
Period	2021-2022
Funding Agency	G. D'Annunzio University of Chieti-Pescara
Host	Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara
Project Duration	18 months
Funding	€ 30.000

Role	Collaborating researcher

Project	**Optical measures of cerebral arterial function as predictors of brain and cognitive aging. N. 1R01AG059878**
Period	2018-2024
Funding Agency	National Institutes of Health (NIH), USA
Host	Beckman Institutes for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA
Project Duration	72 months
Funding	$ 3.459.850
Role	Collaborating researcher

Project	**Department of Excellence**
Period	2018-2023
Funding Agency	Italian Ministry of Education and Research
Host	Department of Neuroscience, Imaging and Clinical Sciences. G. D'Annunzio University of Chieti-Pescara
Project Duration	60 months
Funding	€ 8.000.000
Role	Collaborating researcher

Project	**Advancing Smart Optical Sensing for Health, 692470, H2020 ECSEL-04-2015-ASTONISH**
Period	2017-2019
Funding Agency	European Union
Main Host	Philips Medical Systems International BV
Project Duration	36 months
Total Funding	€ 18.444.623,25
Funding	€ 240.000
Role	Collaborating researcher

Project	**Application of multi-distance diffuse optical tomography to the study of the human brain. N. 5R56MH097973**
Period	2012-2015
Funding Agency	National Institutes of Health (NIH), Stati Uniti d'America
Host	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Illinois, USA
Project Duration	36 months
Funding	€ 932,241
Role	Collaborating researcher

TECHNOLOGICAL TRANSFER

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

Type	**European Patent**
Title	System and method for brain tissue analysis.

Authors / Inventors	Lombardo SL, Maira G, Libertino S, Merla A, **Chiarelli AM**
Identification Number	4030989
Year	2022

TEACHING OR RESEARCH (FELLOWSHIP) APPOINTMENTS AT RELEVANT INTERNATIONAL INSTITUTIONS

Period	Position	Organization /University
2018 - present	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
2024-present	Member and deputy coordinator of the Teaching Body, Doctorate in "Neuroscience and Imaging", University G. D'Annunzio of Chieti-Pescara, Chieti, Italy
2023	Classroom manager for the entrance test to degree courses in the Italian Health Professions
2022-2024	Member of the Teaching Body, Doctorate in "Medical-surgical biotechnology and translational medicine", University of Rome "Tor Vergata"
2022 - present	Member of the Joint Teachers-Students Commission, Degree in Building and Land Techniques, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy
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
2025 - 2026	Diffuse Optical Imaging	FIS/07	PhD Degree, Neuroscience and Imaging	2	Incarico Professore Associato
2025 - 2026	Physics	FIS/07	Technical professions for construction and territory	1	Incarico Professore Associato

2025 - 2026	Physics	FIS/07	Geology	7	Incarico Professore Associato
2025 - 2026	Physics and Introduction to Informatics	FIS/07	Techniques of Cardiocirculatory Pathophysiology and Cardiovascular Perfusion	3	Incarico Professore Associato
2025 - 2026	Brain Imaging	FIS/07	LM-55 Neuroscience	3	Incarico Professore Associato
2024 - 2025	Diffuse Optical Imaging	FIS/07	PhD Degree, Neuroscience and Imaging	2	Associate Professor Assignment
2024 - 2025	Physics	FIS/07	Dentistry	6	Associate Professor Assignment
2024 - 2025	Physics	FIS/07	Technical professions for construction and territory	1	Associate Professor Assignment
2024 - 2025	Physics and Introduction to Informatics	FIS/07	Techniques of Cardiocirculatory Pathophysiology and Cardiovascular Perfusion	3	Associate Professor Assignment
2024-2025	Physics	FIS/07	Geology	5	Associate Professor Assignment
2023 - 2024	Diffuse Optical Imaging	FIS/07	PhD Degree, Neuroscience and Imaging	2	Associate Professor Assignment
2023 - 2024	Physics	FIS/07	Dentistry	6	Associate Professor Assignment
2023 - 2024	Physics	FIS/07	Technical professions for construction and territory	3	Associate Professor Assignment
2023 - 2024	Physics and Introduction to Informatics	FIS/07	Techniques of Cardiocirculatory Pathophysiology and Cardiovascular Perfusion	3	Associate Professor Assignment
2023-2024	Physics	FIS/07	Geology	5	Associate Professor Assignment
2022 – 2023	Diffuse Optical Imaging	FIS/07	PhD Degree, Neuroscience and Imaging	2	Assistant Professor Assignment
2022 - 2023	Physics	FIS/07	Dentistry	6	Assistant Professor Assignment
2022 - 2023	Physics	FIS/07	Technical professions for construction and territory	3	Assistant Professor Assignment
2022 - 2023	Physics and Introduction to Informatics	FIS/07	Techniques of Cardiocirculatory Pathophysiology and Cardiovascular Perfusion	3	Assistant Professor Assignment

2021 – 2022	Diffuse Optical Imaging	FIS/07	PhD Degree, Neuroscience and Imaging	2	Assistant Professor Assignment
2021 - 2022	Physics	FIS/07	Technical professions for construction and territory	6	Assistant Professor Assignment
2021 - 2022	Physics	FIS/07	Geology	6	Assistant Professor Assignment
2020 - 2021	Diffuse Optical Imaging	FIS/07	PhD Degree, Neuroscience and Imaging	2	Assistant Professor Assignment
2020 - 2021	Physics	FIS/07	Geology	5	Assistant Professor Assignment
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 Cardiocirculatory 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 Cardiocirculatory 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

2019-2026	Examiner and Member of the Doctoral Commission for 19 doctoral theses at the University of L'Aquila, Polytechnic of Milan, University 'G. d'Annunzio' of Chieti-Pescara, La Sapienza University of Rome.

PARTICIPATION IN SCIENTIFIC AND JOURNAL EDITORIAL COMMITTEES

Role	**Scientific Council/Journal**
Reviewer	European Research Council, Panel LS7
Reviewer	European Research Council, Panel PE7
Reviewer	Italian Ministry of Universities and Research, Research Quality Assessment 2015-2019
Editorial Board Member	Imaging Neuroscience
Editorial Board Member	Scientific Reports
Editorial Board Member	Frontiers in Human Neuroscience
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	Brain Communications
Reviewer	Brain Research
Reviewer	Brain Sciences
Reviewer	Computers in Human Behavior
Reviewer	Frontiers in Neurology
Reviewer	Frontiers in Molecular Neuroscience
Reviewer	Frontiers in Oncology
Reviewer	Human Brain Mapping
Reviewer	IEEE Access
Reviewer	IEEE Journal of Biomedical and Health Informatics
Reviewer	IEEE's Transactions on Affective Computing
Reviewer	IEEE Transactions in Biomedical Engineering
Reviewer	Il Nuovo Cimento
Reviewer	Imaging Neuroscience
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 Neurochemistry
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

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

CONGRESS PARTICIPATION

Year	Congress
2025	ISMRM Annual Meeting 2024, Honolulu, Hawaii, USA
2024	ISMRM Annual Meeting 2024, Singapore, Canada
2024	AIRMM Annual Meeting, 2023, Padoa, Italy
2023	ISMRM Annual Meeting 2023, Toronto, Canada
2023	CNR Workshop: Multimodal approach for biomedical, Roma, Italy
2022	AIRMM Annual Meeting, 2022, Pisa, Italy
2022	International Society for Magnetic Resonance in Medicine Conference, ISMRM, London, United Kingdom
2021	International Society for Magnetic Resonance in Medicine Conference, ISMRM, Vancouver, Canada
2021	GIDRM Workshop on Artificial Intelligence in NMR, MRI and Neuroscience, Università di Tor Vergata, Rome, Italy
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

PRESENTATIONS AND INVITED TALKS

Year	Month	Title	Occasion and Place
2025	October	Origin of the BOLD signal: from	Clinical fMRI Course,

		biochemistry to biophysics	University 'G. D'Annunzio' of Chieti-Pescara, Chieti, Italy
2025	Ottobre	Functional MRI approaches to quantitatively map brain oxygen metabolism	International School on Magnetic Resonance and Brain Function (ISMRBF), Erice, Italy
2025	May	Functional MRI: Bold & Non-Bold Approaches	ISMRM Annual Meeting 2025, Honolulu, Hawaii, USA
2025	May	A Gradient Echo-Spin Echo BOLD framework for quantitative mapping of OEF and CMRO2 with calibrated functional MRI	ISMRM Annual Meeting 2025, Honolulu, Hawaii USA
2025	Marzo	Neuroimaging approaches to probe the brain in Multiple Sclerosis	Brain day, University 'G. D'Annunzio' of Chieti-Pescara, Chieti, Italy
2024	July	BOLD fMRI: from Biophysics to Statistics	Department Retreat, Department of Neuroscience, Imaging and Clinical Science, Università degli Studi 'G. d'Annunzio' di Chieti-Pescara, Chieti, Italy
2024	April	Calibrated fMRI to Map Oxygen Consumption from Endogenous Modulations in Brain Hemodynamics	AIRMM Annual Meeting 2023, Padua, Italy
2024	January	Origin of the BOLD signal: from biochemistry to biophysics	Clinical fMRI Course, University 'G. D'Annunzio' of Chieti-Pescara, Chieti, Italy
2023	June	Grey Matter Cerebrovascular Reactivity and Oxygen Consumption Mapping Using Resting-State BOLD-ASL Functional MRI	ISMRM Annual Meeting 2023, Toronto, Canada
2023	April	Mapping Brain Oxygen Consumption with functional MRI.	CNR: Multimodal approach for biomedical Applications Rome, Italy
2022	November	Diffuse Optics and Its Integration with MRI: Assessing Cortical and Cerebrovascular Status	AIRMM Annual Meeting, 2022, Pisa, Italy
2022	May	Cerebral Blood Flow Patterns in Term and Premature Neonates measured at Term-Equivalent-Age: a PCASL study	ISMRM Annual Meeting 2022, London UK
2022	May	Evidence from dual-calibrated fMRI for raised mitochondrial oxygen tension in the MS brain	ISMRM Annual Meeting 2022, London UK
2022	May	Oxygen Transport Modelling for Mapping Brain Oxygen Extraction Fraction with Single Gas Calibrated fMRI	ISMRM Annual Meeting 2022, London UK
2021	May	Machine Learning Evaluation of the Effects of Prematurity on Regional BOLD Resting-State Activity and Connectivity, and T1-w Brain Volumes.	ISMRM Annual Meeting 2021, Virtual Conference
2021	May	Grey Matter Cerebrovascular Reactivity in Multiple Sclerosis and its Changes with Immunomodulation: a Breath-Hold BOLD-MRI Study	ISMRM Annual Meeting 2021, Virtual Conference
2021	February	A Machine Learning Framework for Assessing the Effect of Prematurity on MRI Metrics of Functional Connectivity and	GIDRM Workshop on Artificial Intelligence in NMR, MRI and

		Regional Brain Structure	Neuroscience, Tor Vergata University of Rome, Rome, Italy
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 has a solid background in medical physics and information engineering. During his Ph.D., Dr. Chiarelli developed advanced knowledge in medical imaging and neuroimaging. His research, in the period indicated, focused on the analysis of optical signals deriving from brain activity, both of vascular and neuronal origin.
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, for 4 years, 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 USA as well as home to world leading laboratories on diffusive optical imaging (DOI) and magnetic resonance imaging (MRI) to probe brain activity. During his experience in the USA, Dr. Chiarelli worked on projects involving high-density DOI of the brain and its comparison and integration with structural and functional MRI. From 2017 he went back to Italy, were he worked as an Assistant professor of Applied and Medical Physics at the Department of Neuroscience, Imaging and Clinical Sciences (DNISC), University G. d'Annunzio' of Chieti-Pescara, Chieti, Italy, up to 2023. During this period, we worked on European and Italian funded projects concerning the multimodal integration of electrophysiological and optical recordings to evaluate the cardiovascular status and neurovascular coupling and on developing and applying quantitative methods to measure brain cerebrovascular status and oxygenation with MRI and DOI.
From 2023, Dr. Chiarelli is an Associate Professor of Applied and Medical Physics at DNISC. His current research is devoted to the development of quantitative MRI and DOI approaches to probe brain function and structure in vivo, often exploiting advanced data processing tools such as machine learning.
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.

LANGUAGE SKILLS

Native Language					
Italian					
Other Languages	**Comprehension**		**Speaking**		**Writing**
	Listening	**Reading**	**Interaction**	**Oral Production**	
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 fifteen years of research in national and international environments. High supervision capabilities.

DIGITAL SKILLS

Self Assessment

Information Processing	Communication	Content Creation	Security	Problem Solving
Expert user	Expert user	Expert user	Independent user	Expert user
- Excellent knowledge of programming languages: Matlab, Python, Bash - Excellent knowledge of deep learning packages: Tensorflow - Good knowledge of programming languages: C, C ++, Fortran - Excellent ability to use tools dedicated to the analysis of signals and images for neuroimaging: SPM, FSL, NIRS-SPM, Homer2, FieldTrip, EEGlab - Good ability to use tools dedicated to the analysis of signals and images for neuroimaging: AFNI, Freesurfer - Excellent knowledge of statistical analysis packages: SPSS - Excellent ability to use languages for preparing texts: LaTeX - Excellent knowledge of Microsoft applications and the Office package: Word, Excel, PowerPoint.				

INFORMATION ON SCIENTIFIC PRODUCTION

Synthetic Information

Consistency of Scientific Production	
Total number of publications in indexed Journals Proceedings	87
Period	2013-2026

Intensity of Scientific Production	
Average number of indexed publications per year	6.2
Period	2013-2026

Continuity of Scientific Production	
Number of years of scientific production without interruption	14
Period	2013-2025

Additional Information

Academic Age: **13** years (first publication in 2013)
Publications as first author in indexed Journals or Proceedings: **24/87**
Publications as last author in indexed Journals: **6/87**
Publications in indexed journals resulting from international collaborations: **41/82**
Total Impact Factor: **367.523**

SCIENTIFIC PUBLICATIONS

Publications in Indexed Peer-Reviewed Journals (in reverse chronological order)
** underlines first, last or corresponding author*

1. Pomante S, Di Censo D, Caporale A, Fasano F, Zacà D, Fear EJ, Graziano F, Carriero M, Chalet LR, Biondetti E, Caligiuri ME, Germuska M, Wise RG, **Chiarelli AM***. FMRI Approaches to Mapping Cerebrovascular Reactivity: Comparison of Gradient Echo BOLD and Spin Echo BOLD With Arterial Spin Labeling. Magnetic Resonance in Medicine. 2026.

2. Forcione M, **Chiarelli AM**, Perpetuini D, Perkins GA, Stevens AR, Davies DJ, Belli A. Diffuse optical tomography system for acute traumatic brain injury in the intensive care unit: a prospective study on healthy volunteers. Journal of Biomedical Optics. 2025 Feb 1;30(S2):S23912-.

3. **Chiarelli AM**, Germuska M, Di Censo D, Driver I, Caligiuri ME, Thomas H, Manolova S, Chandler HL, Caporale A, Biondetti E, Wise RG. Multiparametric mapping of brain oxygen consumption with resting state calibrated functional MRI. NeuroImage. 2025 Sep 18:121465.

4. Bliakharskaia E, **Chiarelli AM***, Patitucci E, Carriero M, Di Censo D, Biondetti E, Del Gratta C, Capuani S, Palombo M, Tomassini V, Wise RG. Exploring the contribution of gray matter microstructure to R1 contrast via multi-compartment diffusion modelling in the healthy brain. NeuroImage. 2025 Sep 16:121466.

5. Pizzi SD, Tomaiuolo F, Sestieri C, **Chiarelli AM**, Gambi F, Ferretti A, Sensi SL. Modafinil alters the functional connectivity of distinct thalamic nuclei with the neocortex. NeuroImage. 2025 Apr 25:121242.

6. Driver ID, **Chiarelli AM**, Chandler HL, Thomas H, Manolova S, Lu H, Wise RG, Germuska M. Breath-hold calibrated fMRI mapping of absolute cerebral metabolic rate of oxygen metabolism (CMRO2): an assessment of the accuracy and repeatability in a healthy adult population. Imaging Neuroscience. 2024.

7. Pulcini R, **Chiarelli AM**, Sinjari B, Esposito JE, Avolio F, Martinotti R, Pignatelli V, Pignatelli L, Berlincioni L, Martinotti S, Toniato E. A Randomized Clinical Study of a Curcumin and Melatonin Toothpaste Against Periodontal Bacteria. Biomedicines. 2024;12(11):2499.

8. Patitucci E, Di Censo D, **Chiarelli AM,** Germuska M, Tomassini V, Wise RG. Evidence for a sustained cerebrovascular response following motor practice. Imaging Neuroscience. 2024;2:1-5.

9. Chiou N, Günal M, Koyejo S, Perpetuini D, **Chiarelli AM**, Low KA, Fabiani M, Gratton G. Single-Trial Detection and Classification of Event-Related Optical Signals for a Brain–Computer Interface Application. Bioengineering. 2024;11:781.

10. Caporale AS, **Chiarelli AM**, Biondetti E, Villani A, Lipp I, Di Censo D, Tomassini V, Wise RG. Changes of brain parenchyma free water fraction reflect tissue damage and impaired processing speed in multiple sclerosis. Human Brain Mapping. 2024;45:e26761.

11. Cicalini I, **Chiarelli AM**, Chiacchiaretta P, Perpetuini D, Rosa C, Mastrodicasa D, d'Annibale M, Trebeschi S, Serafini FL, Cocco G, Narciso M, Corvino A, Cinalli S, Genovesi D, Lanuti P, Valentinuzzi S, Pieragostino D, Brocco D, Beets-Tan RGH, Tinari N, Sensi S, Stuppia L, Del Boccio P, Caulo M, Delli Pizzi A. Multi-omics staging of locally advanced rectal cancer predicts treatment response: a pilot study. La radiologia medica. 2024: 1-15.

12. Punzi M, Sestieri C, Picerni E, **Chiarelli AM**, Padulo C, Pizzi AD, Tullo MG, Tosoni A, Granzotto A, Della Penna S, Onofrj M, Ferretti A, Delli Pizzi S, Sensi S. Atrophy of hippocampal subfields and amygdala nuclei in subjects with mild cognitive impairment progressing to Alzheimer's disease. Heliyon. 2024. doi: https://doi.org/10.1016/j.heliyon.2024.e27429

13. Biondetti E, **Chiarelli AM**, Germuska M, Lipp I, Villani A, Caporale AS, Patitucci E, Murphy K, Tomassini V, Wise RG. Breath-hold BOLD fMRI without CO2 sampling enables estimation of venous cerebral blood volume: potential use in normalization of stimulus-evoked BOLD fMRI data. NeuroImage. 2023 Dec 7:120492.

14. Mascali D, Villani A, **Chiarelli AM**, Biondetti E, Lipp I, Digiovanni A, Pozzilli V, Caporale AS, Rispoli MG, Ajdinaj P, D'Apolito M. Pathophysiology of MS damage and repair: linking cerebral hypoperfusion to the development of irreversible tissue loss in MS using MRI. European Journal of Neurology. 2023. https://doi.org/10.1111/ene.15827

15. Perpetuini D, Gunal M, Chiou N, Koyejo S, Mathewson K, Low KA, Fabiani M, Gratton G, **Chiarelli AM***. Fast Optical Signals for Real-Time Retinotopy and Brain Computer Interface. Bioengineering. 2023: 10, 553. https://doi.org/ 10.3390/bioengineering10050553

16. Piccirilli E, **Chiarelli AM***, Sestieri C, Mascali D, Garcia DC, Primavera A, Salomone R, Wise RG, Ferretti A, Caulo A. Cerebral blood flow patterns in preterm and term neonates assessed with pseudo-continuous arterial spin labeling perfusion. Human Brain Mapping. 2023. https://doi.org/10.1002/hbm.26315

17. Chiacchiaretta P, Mastrodicasa D, **Chiarelli AM**, Luberti R, Croce P, Sguera M, Torrione C, Marinelli C, Marchetti C, Domenico A, Cocco G, Di Credico A, Russo A, D'Eramo C, Corvino A, Colasurdo M, Sensi S, Muzi M, Caulo M, Delli Pizzi A. MRI-Based Radiomics Approach Predicts Tumor Recurrence in ER + /HER2 − Early Breast Cancer Patients. Journal of Digital Imaging. 2023: 1-10. https://doi.org/10.1007/s10278-023-00781-5.

18. Chandler HL, Stickland RC, Patitucci E, Germuska M, **Chiarelli AM**, Foster C, Bhome-Dhaliwal S, Lancaster TM, Saxena N, Khot S, Tomassini V. Reduced brain oxygen metabolism in patients with multiple sclerosis: Evidence from dual-calibrated functional MRI. Journal of Cerebral Blood Flow & Metabolism. 2023, 0271678X221121849.

19. Toto L, D'Aloisio R, Libertini D, D'Onofrio G, De Nicola C, Mastropasqua R, **Chiarelli AM*.** Study of nonperfusion area changes after ranibizumab intravitreal injection for diabetic macular edema by means of widefield OCT angiography. Ophthalmic Res. 2022 , DOI: 10.1159/000523749

20. **Chiarelli AM***, Villani A, Mascali D, Petsas N, Biondetti E, Caporale A, Digiovanni A, Grasso EA, Pozzilli V, Ajdinaj P, D'Apolito M, Rispoli M, Sensi S, Murphy K, Pozzilli C, Wise RG, Tomassini V. Cerebrovascular reactivity in multiple sclerosis is restored with reduced inflammation during immunomodulation. Scientific Reports 2022, 12, 15453.

21. Onofrj V, **Chiarelli AM**, Wise RG, Colosimo C, Caulo M. Interaction of the Salience Network, Ventral Attention Network, Dorsal Attention Network and Default Mode Network in Neonates and Early Development of the Bottom-up Attention System. Brain Struct Funct 2022. https://doi.org/10.1007/s00429-022-02477-y.

22. Perpetuini D, Formenti D, Iodice P, Cardone D, Filippini C, **Chiarelli AM**, Michielon G, Trecroci A, Alberti G, Merla A. Central and Peripheral Thermal Signatures of Brain-Derived Fatigue during Unilateral Resistance Exercise: A Preliminary Study. Biology 2022, 11, 322. https://doi.org/10.3390/biology11020322

23. **Chiarelli AM***, Germuska M, Chandler H, et al. A flow-diffusion model of oxygen transport for quantitative mapping of cerebral metabolic rate of oxygen (CMRO2) with single gas calibrated fMRI. Journal of Cerebral Blood Flow & Metabolism 2022, 41, 1-18. https://doi.org/10.1177/0271678X221077332

24. Filippini, CD, Cardone D Perpetuini D, **Chiarelli AM**, Petitto LA, Merla A. Assessment of autonomic response in 6–12-month-old babies during the interaction with robot and avatar by means of thermal infrared imaging. Quantitative InfraRed Thermography Journal 2022, 1-14. https://doi.org/10.1080/17686733.2021.2025019

25. Rispoli MG, Valentinuzzi S, De Luca G, Del Boccio P, Federici L, Di Ioia M, DigiovanniA, Grasso EA , Pozzilli V, Villani A, **Chiarelli AM** , Onofrj M, Wise RG, Pieragostino D, and Tomassini V. Contribution of Metabolomics to Multiple Sclerosis Diagnosis, Prognosis and Treatment. International Journal of Molecular Sciences 2021, 22, 11112. https://doi.org/10.3390/ijms222011112.

26. Delli Pizzi A, **Chiarelli AM**, Chiacchiaretta P, Valdesi C, Croce P, Mastrodicasa D, Villani M, Trebeschi S, Serafini FL, Rosa C, Cocco G, Luberti R, Conte S, Mazzamurro L, Mereu M, Patea RL, Panara V, Marinari S, Vecchiet J, Caulo M. Radiomics-based machine learning differentiates "ground-glass" opacities due to COVID-19 from acute non-COVID-19 lung disease. Scientific Report 2021, 11, 17237. https://doi.org/10.1038/s41598-021-96755-0.

27. Perpetuini D , Cardone D , Filippini C , **Chiarelli AM**, Merla A. A Motion Artifact Correction Procedure for fNIRS Signals Based on Wavelet Transform and Infrared Thermography Video Tracking. Sensors 2021, 21,5117. https://doi.org/10.3390/s21155117.

28. **Chiarelli AM***, Sestieri C, Navarra R, Wise RG, Caulo M. Distinct Effects of Prematurity on MRI Metrics of Brain Functional Connectivity, Activity and Structure: Univariate and Multivariate Analyses. Human Brain Mapping. 2021, 1–15. https://doi.org/10.1002/hbm.25456.

29. Filippini C, Cardone D, Perpetuini D, **Chiarelli AM**, Gualdi G, Amerio P, Merla A. Convolutional neural networks for differential diagnosis of Raynaud's Phenomenon based on hands thermal patterns. Applied Sciences. 2021; 11. https://doi.org/10.3390/app11083614.

30. **Chiarelli AM***, Perpetuini D, Croce P, Filippini C, Cardone D, Rotunno L, Anzoletti N, Zito M, Zappasodi F, Merla A. Evidence of Neurovascular Un-Coupling in Mild Alzheimer's Disease through Multimodal EEG-fNIRS and Multivariate Analysis of Resting-State Data. Biomedicines, 2021; 9, 337. https://doi.org/10.3390/biomedicines9040337.

31. Delli Pizzi A, **Chiarelli AM**, Chiacchiaretta P, d'Annibale M, Croce P, Rosa C, Mastrodicasa D, Trebeschi S, Lambregts DMJ, Caposiena D, Serafini FL, Basilico R, Cocco G, Di Sebastiano P, Cinalli S, Ferretti A, Wise RG, Genovesi D, Beets-Tan RGH, Caulo M. MRI-based clinical-radiomics model predicts tumor response before treatment in locally advanced rectal cancer. Scientific Reports, 2021; 11: 5739. doi.org/10.1038/s41598-021-84816-3.

32. Lu W, Bai W, Zhang H, Xu C, **Chiarelli AM**, Vázquez-Guardado A, ... & Rogers JA. Wireless, implantable catheter-type oximeter designed for cardiac oxygen saturation. Science Advances. 2021; 7: eabe0579. DOI: 10.1126/sciadv.abe0579.

33. Forcione M, Ganau M, Prisco L, **Chiarelli AM**, Bellelli A, Belli A, Davies DJ. Mismatch between Tissue Partial Oxygen Pressure and Near-Infrared Spectroscopy Neuromonitoring of Tissue Respiration in Acute Brain Trauma: The Rationale for Implementing a Multimodal Monitoring Strategy. Int. J. Mol. Sci. 2021; 22: 1122. doi.org/10.3390/ijms22031122 (registering DOI)

34. Perpetuini D, **Chiarelli AM**, Cardone D, Filippini C, Rinella S, Massimino S, Bianco F, Bucciarelli V, Vinciguerra V, Fallica G, Perciavalle V, Gallina S, Conoci S, Merla A. Prediction of state anxiety by machine learning applied to photoplethysmography data. PeerJ. 2021; 9: e10448.

35. **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

36. Cardone D, Spadolini E, Perpetuini D, Filippini C, **Chiarelli AM**, Merla A. Automated warping procedure for facial thermal imaging based on features identification in the visible domain. Infrared Physics & Technology. 2020, 103595.

37. Perpetuini D, Chiarelli AM, Filippini C, Cardone D, Croce P, Rotunno L, Anzoletti N, Zito M, Zappasodi F, Merla A. Working Memory Decline in Alzheimer's Disease Is Detected by Complexity Analysis of Multimodal EEG-fNIRS. Entropy. 2020, 12: 1380; doi.org/10.3390/e22121380

38. 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.

39. 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.

40. 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.

41. 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.

42. 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.

43. **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.

44. 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.

45. 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.

46. 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.

47. 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.

48. 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.

49. 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.

50. 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.

51. **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.

52. **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.

53. **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.

54. 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.

55. 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.

56. Perpetuini D, Cardone D, **Chiarelli AM**, Filippini C, Croce P, Zappasodi F, Rotunno L, Anzelotti N, Zito M, Merla A. Autonomic impairment in Alzehimer'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.

57. 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.

58. **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.

59. 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.

60. **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.

61. **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.

62. **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.

63. **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.

64. **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.

65. 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.

66. **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.

67. 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.

68. 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.

69. 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.

70. 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.

71. 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.

72. 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.

73. **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.

74. **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.

75. **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.

76. 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.

77. **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.

78. 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.

79. 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.

80. 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 Biolog. Sci 2013; 280: 20131-140. doi: 10.1098/rspb.2013.1140.

81. 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.

82. **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. Perpetuini D, Rocco G, Fear E, Pomante S, Chalet L, Graziano F, Valeri E, Carriero M, Del Gratta C, Perrucci MG, Wise E, **Chiarelli AM***. Long Short-Term Memory Networks for Fast Optical Signal Identification in the Human Visual Cortex for Brain Computer Interface Applications. International Conference on e-Health and Bioengineering (EHB) 2025.

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. Pomante S, Di Censo D, Caporale A, Fasano F, Zaca D, Fear EJ, Graziano F, Carriero M, Chalet L, Biondetti E, Caligiuri ME, Germuska M, Wise RG, **Chiarelli AM***. Mapping Cerebrovascular Reactivity: Comparison of Gradient Echo and Spin Echo BOLD with Arterial Spin Labelling. ISMRM 2026, May 2026, Cape Town, South Africa.

2. Rocco R, Chalet L, Pomante S, Fear EJ, Graziano F, Di Censo D, Carriero M, Perpetuini D, Del Gratta C, Perrucci MG, Wise R, **Chiarelli AM***. Simultaneous gas-free calibrated fMRI and fNIRS measurements in human visual cortex: a feasibility study. ISMRM 2026, May 2026, Cape Town, South Africa.

3. Chalet L, Delphin A, Lemasson B, Baribier EL, Wise R, Biondetti E, **Chiarelli AM**, Christen T. A retrospective study on the effect of exogenous-gas challenge on brain QSM-, mqBOLD-SO2 and χ-separation in rats. ISMRM 2026, May 2026, Cape Town, South Africa.

4. Di Censo D, Fear EJ, Caporale A, Censi S, Graziano F, Biondetti E, Chalet L, Rocco G, Carriero M, Pomante S, Patitucci E, Fasano F, Zaca D, Germuska M, **Chiarelli AM**, Tomassini V, Wise R. Assessing Cerebral Oxygen Metabolism in Multiple Sclerosis Using Breath-Hold single Calibrated fMRI. ISMRM 2026, May 2026, Cape Town, South Africa.

5. Chalet L, Di Censo D, Pomante S, Rocco G, Fear E, Graziano F, Carriero M, Fasano F, Biondetti E, Perpetuini D, Wise R, Chiarelli AM. Integrating a flow-diffusion model of O2 transport to qBOLD for contrast-agent- and gas-free mapping of deoxyCBV and CMRO2. ISMRM 2026, May 2026, Cape Town, South Africa.

6. Fear EJ, Di Censo D, Pomante S, Carriero M, Graziano F, Chalet L, Rocco G, Caporale A, Biondetti E, Fasano F, Zaca D, Tomassini V, **Chiarelli AM**, Wise RG. Assessing the Minimum Number of Breath-Holds Required for Stable $CMRO_2$ and OEF Estimates Using Breath-Hold Calibrated fMRI. ISMRM 2026, May 2026, Cape Town, South Africa.

7. Carriero M, Caporale A, Di Censo D, Bliakharskaia E, Pomante S, Censi S, Graziano F, Fear EJ, Biondetti E, Germuska M, Tomassini V, **Chiarelli AM**, Palombo M, Wise R. Insights into brain energy-microstructure relationship through MRI-derived brain soma density maps. ISMRM 2026, Maggio 2026, Città del Capo, Sud Africa. ISMRM 2026, May 2026, Cape Town, South Africa.

8. **Chiarelli AM***, Chalet L, Pomante S, Di Censo D, Caporale A, Biondetti E, Fasano F, Zaca D, Rocco G, Carriero M, Graziano F, Fear EJ, Caligiuri ME, Wise RG, Germuska M. Quantitative Functional BOLD (qfBOLD) for Oxygen Extraction Fraction Mapping Using ASL-free Gradient Echo/Spin Echo fMRI. ISMRM 2026, May 2026, Cape Town, South Africa.

9. Biondetti E, Di Censo D, Pomante S, Censi S, , Bliakharskaia E, Carriero M, Graziano F, Caporale A, **Chiarelli AM**, Wise R. T1 mapping Based on 3D SPACE Shows the Transfer of Oxygen into Cerebrospinal Fluid during Hyperoxia in the Healthy Brain. ISMRM 2026, May 2026, Cape Town, South Africa.

10. Rocco G, Pomante S, Fear E, , Chalet L, Graziano F, Carriero M, Perpetuini D Perrucci MG, Del Gratta C, Wise R, **Chiarelli AM.** Towards simultaneous calibrated fMRI and fNIRS Acquisitions: a case study in the visual cortex. fNIRS UK, September 2025, Cambridge, UK.

11. Perpetuini D, Cardone D, **Chiarelli AM**, Merla A**.**Alzheimer's Disease Classification Using Scattering Wavelet Applied to Resting-State fNIRS Signals. fNIRS Italy, Luglio 2025, Genoa, Italy.

12. Rocco G, Perpetuini D, Fear E, Pomante S, Chalet L, Graziano F, Perrucci MG, Del Gratta C, Wise R, **Chiarelli AM.** Towards simultaneous calibrated fMRI and fNIRS Acquisitions: a case study in the visual cortex. fNIRS Italy, Luglio 2025, Genoa, Italy.

13. Biondetti E, Pomante S, Censi S, Di Censo D, Bliakharskaia E, Carriero M, Graziano F, Caporale A, **Chiarelli AM**, Wise R. A Measuring T1 of the cerebrospinal fluid across the whole human brain using the SPACE-FLAIR sequence. AIRMM 2025, March 2025, Lecco, Italy.

14. Pomante S, Fasano F, Di Censo D, Censi S, Graziano F, Carriero M, Bliakharskaia E, Caporale A, Biondetti E, Germuska M, Wise R, **Chiarelli AM***. Measuring cerebrovascular reactivity: a comparison of simultaneous Gradient-Echo and Spin-Echo BOLD with Arterial Spin Labelling. AIRMM 2025, March 2025, Lecco, Italy.

15. Carriero M, Caporale A, Di Censo D, Pomante S, Bliakharskaia E, Censi S, Graziano F, Germuska M, Biondetti E, Palombo M, Tomassini V, **Chiarelli AM,** Wise R. Exploring brain energy-microstructure relationships with calibrated fMRI and diffusion MRI measurements. AIRMM 2025, March 2025, Lecco, Italy.

16. Bliakharskaia E, Carriero M,Patitucci E, Di Censo D, Biondetti E, **Chiarelli AM**, Tomassini V, Del Gratta C, Wise RG, Caporale A. Investigating the relationship between grey matter microstructure, via multi-compartment diffusion modeling and cortical myelination in the healthy brain. AIRMM 2025, March 2025, Lecco, Italy.

17. Caporale A…., **Chiarelli AM**, Wise R. Investigating gray matter microstructure via multi-compartment diffusion model and cortical myelination in healthy brains. ISMRM 2025, May 2025, Honolulu, Hawaii, USA.

18. Carriero M, Caporale A, Di Censo D, Pomante S, Bliakharskaia E, Censi S, Graziano F, Germuska M, Biondetti E, Palombo M, Tomassini V, **Chiarelli AM,** Wise R. Exploring brain microstructure-energy relationships with diffusion MRI and calibrated fMRI measurements. ISMRM 2025, May 2025, Honolulu, Hawaii, USA.

19. Pomante S, Fasano F, Di Censo D, Censi S, Graziano F, Carriero M, Bliakharskaia E, Caporale A, Biondetti E, Germuska M, Wise R, **Chiarelli AM***. Measuring cerebrovascular reactivity: a comparison of Gradient-Echo and Spin-Echo BOLD with Arterial Spin Labelling. ISMRM 2025, May 2025, Honolulu, Hawaii, USA.

20. Di Censo D, Censi S, Graziano F, Patitucci E, Carriero M, Pomante S, Procida F, Tomaiuolo F, Tullo MG, Germuska M, Biondetti E, Caporale AS, **Chiarelli AM**, Tomassini V, Wise RG. A Investigation of sustained blood flow and metabolic changes in the healthy brain following motor learning. ISMRM 2025, May 2025, Honolulu, Hawaii, USA.

21. Biondetti E, Pomante S, Censi S, Di Censo D, Bliakharskaia E, Carriero M, Graziano F, Caporale A, , **Chiarelli AM**, Wise R. A Three-dimensional T1 measurement in the cerebrospinal fluid using the SPACE-FLAIR sequence. ISMRM 2025, May 2025, Honolulu, Hawaii, USA.

22. **Chiarelli AM**, Pomante S, Fasano F, Caligiuri ME, Censi S, Di Censo D, Bliakharskaia E, Carriero M, Graziano F, Caporale A, Biondetti E, Wise R, Germuska M. A Gradient Echo-Spin Echo BOLD framework for quantitative mapping of OEF and CMRO2 with calibrated functional MRI. ISMRM 2025, May 2025, Honolulu, Hawaii, USA.

23. Forcione M, **Chiarelli AM**, PerpetuiniD, Perkins GA, , Stevens A, Davies DJ, Belli A. A diffuse optical tomography system to scan acute traumatic brain injury patients in the intensive care unit: a prospective study on healthy volunteers. fNIRS Biennial Meeting. September 2024, Birmingham, UK.

24. Forcione M, Perkins GA, **Chiarelli AM**, Stevens A, Perpetuini D, Davies DJ, Belli A. Contrast-enhanced diffuse optical tomography in acute, moderate and severe traumatic brain injury: a prospective observational study. fNIRS Biennial Meeting. September 2024, Birmingham, UK.

25. Censi ST, Patitucci E, Di Censo D, **Chiarelli AM**, Germuska M, Tomassini V, Wise RG. Looking for a «Metabolic Reserve»: Linking baseline physiology to task performance in healthy subjects and multiple sclerosis patients. AIRMM Annual Meeting, April 2024, Padua, Italy.

26. Biondetti E, **Chiarelli AM**, Caporale AS, Di Censo D, Driver I, Germuska M, Wise RG. Cerebrovascular Reactivity Measured from BOLD or ASL during Breath-Holding: What Does it Represent? AIRMM Annual Meeting, April 2024, Padua, Italy.

27. Di Censo D, **Chiarelli AM**, Patitucci E, Germuska M, Censi S, Graziano F, Biondetti E, Caporale AS, Tomassini V, Wise RG. Comparison of the spatial distribution of BOLD Regional Homogeneity (ReHo) and Cerebral Blood Flow at rest. AIRMM Annual Meeting, April 2024, Padua, Italy.

28. Bliakharskaia E, Caporale A, Patitucci E, Germuska M, **Chiarelli AM**, Biondetti E, Tomassini V, Wise RG. Investigating the relationship between the fraction of restricted water diffusion, cortical myelination and functional brain activity. AIRMM Annual Meeting, April 2024, Padua, Italy.

29. **Chiarelli AM**, Germsuska M, Di Censo D, Driver I, Caligiuri MA, Caporale A, Biondetti E, Wise RG. Calibrated fMRI to Map Cerebrovascular Reactivity and Oxygen Consumption from Endogenous Modulations in Brain Hemodynamics, AIRMM Annual Meeting, April 2024, Padua, Italy.

30. **Chiarelli AM**, Germsuska M, Caligiuri MA, Patitucci E, Caporale A, Biondetti E, Di censo D, Chandler H, Murphy K, Wise RG. Frequency-Domain Machine Learning Estimation of Maximum BOLD Modulation and Grey Matter Oxygen Consumption with Resting-State BOLD-ASL fMRI. ISMRM Annual Meeting, May 2024, Singapore.

31. Caligiuri MA, Biondetti E, Quattrone A, Chimento I, Buonacore J, **Chiarelli AM**, Wise RG, Quattrone A.. Nigrosome1 identification at 3T in Parkinson's disease and healthy controls: comparison of manual versus automated approaches. ISMRM Annual Meeting, May 2024, Singapore.

32. Di Censo D, **Chiarelli AM**, Patitucci E, Germuska M, Censi S, Graziano F, Biondetti E, Caporale AS, Tomassini V, Wise RG. Comparison of the spatial distribution of BOLD Regional Homogeneity (ReHo) and Cerebral Blood Flow at rest. ISMRM Annual Meeting, May 2024, Singapore.

33. Biondetti E, **Chiarelli AM**, Caporale AS, Di Censo D, Driver I, Germuska M, Wise RG. Comparison of BOLD and ASL-derived Measures of Cerebrovascular Reactivity Acquired During Breath-Hold. ISMRM Annual Meeting, May 2024, Singapore.

34. Ian D, **Chiarelli AM**, Wise RG, Germuska M. Accuracy, repeatability, and sensitivity of breath-hold calibrated fMRI for the mapping of absolute CMRO2. ISMRM Annual Meeting, May 2024, Singapore.

35. Caporale AS, **Chiarelli AM**, Biondetti E, Villani A, Lipp I, Tomassini V, Wise RG. Brain parenchyma free water fraction is associated with tissue damage and impaired processing speed in multiple sclerosis. Biophysics@Rome. April 2023, Rome, Italy.

36. **Chiarelli AM**, Patitucci E, Germuska M, Caporale AS, Biondetti E, Chandler H, Murphy K, Tomassini V, Wise RG. Mapping Grey Matter Cerebrovascular Reactivity and Oxygen Consumption Using Resting-State BOLD-ASL Functional MRI. ISMRM Annual Meeting. June 2023, Toronto, Canada.

37. Caporale AS, **Chiarelli AM**, Biondetti E., Villani A, Lipp I, Tomassini V, Wise RG. Tissue damage and impaired processing speed are related to brain parenchyma free water fraction in multiple sclerosis. ISMRM Annual Meeting. June 2023, Toronto, Canada.

38. Caporale AS, **Chiarelli AM**, Biondetti E., Villani A, Lipp I, Tomassini V, Wise RG. Tissue damage and impaired processing speed are related to brain parenchyma free water fraction in multiple sclerosis. AIRMM. November 2022, Pisa, Itay.

39. Piccirilli E, **Chiarelli AM**, Mascali D, Calvo Garcia D, Sestieri C, Wise RG, Ferretti A, Caulo M. Cerebral Blood Flow Patterns in Preterm and Term Neonates Assessed with Pseudo-Continuous Arterial Spin Labeling Perfusion MRI. American Society of NeuroRadiology (ASNR) 2022, May 2022, New York, USA.

40. Biondetti E**, Chiarelli AM**, Lipp I, Stickland R, Villani A, Patitucci E, Tomassini V, Wise RG. Reducing Between-Subject Variability in Stimulus-Evoked BOLD fMRI Using Breath Hold-Derived Vascular Covariates. ISMRM Annual Meeting. May 2022, London, United Kingdom.

41. Germuska M**, Chiarelli AM**, Chandler H, Driver Ian, Wise RG. Combining gradient and spin echo calibrated fMRI for mapping brain oxygen extraction fraction. ISMRM Annual Meeting. May 2022, London, United Kingdom.

42. **Chiarelli AM***, Germuska M, Chandler H, Stickland R, Patitucci E, Biondetti E, Mascali D, Saxena N, Khot S, Steventon J, Foster C, Rodríguez-Soto AE, Englund E, Murphy K, Tomassini V, Wehrli FW, Wise RG. Oxygen Transport Modelling for Mapping Brain Oxygen Extraction Fraction with Single Gas Calibrated fMRI. ISMRM Annual Meeting. May 2022, London, United Kingdom.

43. **Chiarelli AM***, Patitucci E, Chandler H, Tomassini V, Germuska M, Wise RG. Evidence from dual-calibrated fMRI for raised mitochondrial oxygen tension in the MS brain. ISMRM Annual Meeting. May 2022, London, United Kingdom.

44. **Chiarelli AM***, Piccirilli E, Sestieri C, Mascali D, Biondetti E, Ferretti A, Wise RG, Caulo M. Cerebral Blood Flow Patterns in Term and Premature Neonates measured at Term-Equivalent-Age: a PCASL study. ISMRM Annual Meeting. May 2022, London, United Kingdom.

45. Digiovanni A, Mascali D, **Chiarelli AM**, Ilona Lipp, Grasso E, Pozzilli V, Rispoli MG, Villani A, D'Apolito M, Tomassini V, Wise RG. Physiological Basis for Sex Differences in MS Damage: MRI Evidence. World Congress of Neurology (WCN), October 2021, Rome, Italy

46. Onofrj V, **Chiarelli AM**, Wise RG, Caulo M. Interaction of the Salience Network, Ventral attention Network, Dorsal Attention Network and Default Mode Network in neonates and early development of the bottom-up attention system. American Society of Neuroradiology (ASNR). May 2021, Virtual Meeting

47. Digiovanni A, Mascali D, **Chiarelli AM**, Biondetti E, Ilona Lipp, Pozzilli V, Tomassini V, Wise RG. Investigating grey matter perfusion in relation to damage and disability in multiple sclerosis. Organization for Human Brain Mapping (OHBM), June 2021, Virtual Meeting

48. Filippini C, **Chiarelli AM**, Cardone D, Perpetuini D, LorenzaB, Agnifili L, Merla A. Eye aging assessment combining thermal Infrared imaging and deep learning approach. SPIE Optics + Photonics. Agosto 2021, San Diego, USA.

49. Perpetuini D, Filippini C, **Chiarelli AM**, Cardone D, Rinella S, Massimino S, Bianco F, Bucciarelli V, Vinciguerra V, Fallica PG, Perciavalle V, Gallina S, Merla A. Convolutional neural network model for Augmentation Index prediction based on photoplethysmography. SPIE Optics + Photonics. Agosto 2021, San Diego, USA.

50. Mascali D, **Chiarelli AM**, Lipp I, Digiovanni A, Tomassini V, Wise RG. Relationship between global grey matter perfusion, damage and disability in multiple sclerosis. ISMRM Annual Meeting. May 2021, Vancouver, Canada.

51. Mascali D, **Chiarelli AM**, Wise RG, Giove F. A quality-control database for the resting-state young-adult human connectome project. ISMRM Annual Meeting. May 2021, Vancouver, Canada.

52. **Chiarelli AM***, Mascali D, Petsas N, Pozzilli C, Wise RG, Tomassini V. Grey Matter Cerebrovascular Reactivity in Multiple Sclerosis and its Changes with Immunomodulation: a Breath-Hold BOLD-MRI study. ISMRM Annual Meeting. May 2021, Vancouver, Canada.

53. **Chiarelli AM***, Sestieri C, Mascali D, Wise RG, Caulo M. Machine Learning Evaluation of the Effects of Prematurity on Regional BOLD Resting-State Activity and Connectivity, and T1-w Brain Volumes. ISMRM Annual Meeting. May 2021, Vancouver, Canada.

54. Forcione M, Chiarelli AM, Perpetuini D, Davies DJ, Merla A, Belli A. A method to perform functional near-infrared spectroscopy in diffuse optical tomography on traumatic brain injury patients in the intensive care unit: a prospective study on healthy volunteers. Yearly meeting of the Biomedical Photonics Network. December 2020, Virtual Conference.

55. Filippini C, Perpetuini D, Cardone D, **Chiarelli AM**, Merla A. Thermal infrared Imaging and artificial intelligence techniques can support Alzheimer disease diagnosis. AIxIA, 19th

International Conference of the Italian Association for Artificial Intelligence, November 2020, Virtual Conference.

56. 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.

57. 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.

58. 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.

59. 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.

60. 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.

61. 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.

62. 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.

63. 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.

64. 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.

65. 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.

66. 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. Applepies (Applications in Electronics Pervading Industry, Environment and Society) 2018, September 2018, Pisa, Italy.

67. **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 siagnosis: a multimodal EEG-fNIRS and Deep Learning approach. fNIRS 2018, October 2018, Tokyo, Japan.

68. 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.

69. 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.

70. **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

71. **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.

72. 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.

73. **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.

74. **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.

75. Maira G, **Chiarelli AM**, Libertino S, Mazzillo M, Zappasodi F, Di Pompeo F, Merla A., Fallica G, Lombardo S. SiliconPhotomultipliers for CW-fNIRS. Fotonica, May 2018, Lecce, Italy.

76. **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 characterizazion. 4 Convegno Nazionale Sensori, February 2018, Catania, Italy.

77. 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.

78. 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.

79. **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.
80. **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.

81. **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.

82. Fletcher MS, Low KA, Tan C, Kong T, Zimmerman B, Schneider-Garces N, Matthewson 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.

83. **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.

84. 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.

85. 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.

86. 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.

87. 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.

88. Tan CH, Low KA, Zimmerman B, Schneider-Garces N, **Chiarelli AM**, Fletcher M, Maclin EL, Gratton G, Fabiani, M. Measuring vascular tone in the brain using optical imaging during voluntary breath holding. Psychophysiology, 2014: 51, 34.

89. **Chiarelli AM***, Di Vacri A, Romani GL, Merla A. Fast optical signal in visual cortex: improving detection by General Linear Convolution Model. fNIRS 2012, 2012. London, United Kingdom.

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, 10.03.2026