PERSONAL INFORMATION

Last Name	CHIARELLI
First Name	Antonio Maria
Date of Birth	18/01/1985
Nationality	Italian Green Card owner, Stati Uniti d'America dal 2014 al 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	Assistant Professor
SSD	FIS/07 – Medical Physics
Italian National Academic Scientific Sector	02/D1 – Applied Physics
Date of Employment	01/07/2017
University and Department of Affiliation	University 'G. d'Annunzio' of Chieti-Pescara, Department of Neuroscience, Imaging and Clinical Sciences (D.N.I.S.C.)
Place	Institute for Advanced Biomedical Technologies (I.T.A.B.), 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 (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

Year	Ruolo/Tipologia	Institute/Center	Project/Other Information
2020 - oggi	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 - oggi	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 - oggi	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 Researcher position (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 Researcher position (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 MAJOR RESEARCH GRANTS

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; implementation of algorithms, data analysis, images and signal, drafting of scientific manuscripts

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; participation in the writing of the research proposal

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; 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

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; implementation of data, image and signal analysis algorithms, in vivo measurements, drafting of scientific manuscripts

Project	**Cognitive and Brain Development in Premature Infants**
Period	2012-2015
Funding Agency	CNLM/Abbott Nutrition

Host	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Illinois, UDS
Project Duration	36 months
Funding	$ 1,040,068
Role	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

Project	**Neuromarkers of brain damage and maturation in preterm neonates: assessing the prognostic value of resting-state functional connectivity**
Funding Agency	Italian Ministry of Health
Main Host	ASL 2 Abruzzo – Lanciano-Vasto-Chieti
Project Duration	36 months
Total Funding	€ 450.000,00
Funding	€ 90.000,00
Role	Co-PI

RESULTS OBTAINED IN TECHNOLOGICAL TRANSFER

Type	**Italian Patent**
Title	Circuito, procedura e algoritmo per operare fotorivelatori SiPM in condizioni ottimali per sistemi fNIRS / DOT
Authors / Inventors	Lombardo SL, Maira G, Libertino S, Merla A, **Chiarelli AM**
Identification Number	10201900016424
Year	2019

TEACHING OR RESEARCH (FELLOWSHIP) APPOINTMENTS AT RELEVANT INTERNATIONAL INSTITUTIONS

Period	**Position**	**Organization /University**
2020 - present	Confirmed Affiliated Research Fellow	Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign (UIUC), Urbana, Illinois, USA
2019 - 2020	ConfirmedAffiliated 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 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

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	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	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 Cession 'Acoustic and Optical Sensors'	Engineering in Medicine and Biology Conference, EMBC Berlin, Germany

CONGRESS PARTICIPATION

Year	Congress
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

Year	Month	Tittle	Occasion and Place
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, and its integration and comparison with functional and anatomical nuclear magnetic resonance and electroencephalography. Dr. Chiarelli has good hardware development skills, and excellent skills in software programming for signal, image and data analysis.

During the PhD, 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.
Since 2017, 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).
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

Years	PI of the Research Group	Research Group Institution	Topic	Number of Joint Publications
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	0
2019 - present	Prof. Richard Wise	Cardiff University Brain Research Imaging Centre (CUBRIC), University of Cardiff, Cardiff, United Kingdom; Department of Neuroscience,	Collaboration on the use of diffuse optical imaging and functional magnetic resonance for the evaluation of brain perfusion through transient hypoxia	0

		Imaging and Clinical Sciences, University 'G. d'Annunzio' of Chieti-Pescara, Chieti, Italy		
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)	1
2017 - present	Prof. Sergio Fantini	Department of Biomedical Engineering, Tufts University, Boston, Massachusetts, USA	Collaboration on the quantitative mapping of the Effective Attenuation Coefficient of the head and brain tissue through the use of high-density diffusive optical imaging	1
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	Ccollaboration on multimodal imaging with functional near-infrared spectroscopy (fNIRS) and electroencephalography (EEG)	9
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	3

			optical properties of the skin and the saturation of arterial and tissue oxygen in humans and animal models	
2014 - present	Prof. Fabrice Wallois	Institut national de la santé et de la recherche médicale (INSERM), Università 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	21

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 ten 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
- 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, NIRS-SPM, Homer2, FieldTrip, EEGlab
- Good ability to use tools dedicated to the analysis of signals and images for neuroimaging: Fsl, 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	46
Period	2013-2020

Intensity of Scientific Production	
Average number of indexed publications per year	5.75
Period	2013-2020

Continuity of Scientific Production	
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: **18/46 (39.1%)**
Publications as last author in indexed Journals: **2/42 (4.8%)**
Publications in indexed journals resulting from international collaborations: **20/42 (47.6%)**
Total Impact Factor: **177.658**

SCIENTIFIC PUBLICATIONS

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

1. 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. In Pubblicazione.

2. 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.

3. **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.

4. 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.

5. 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.

6. 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.

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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

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