CV of Prof. Antonio Ferretti

Personal Information

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Current position

Full Professor of Biomedical Engineering (ministerial scientific sector, SSD: IBIO-01/A) at University "G. D'Annunzio" of Chieti-Pescara - Department of Neuroscience, Imaging and Clinical Sciences.

Education and previous positions:

March 2024-today: Full Professor of Biomedical Engineering

May 2021-February 2024: Associate Professor of Biomedical Engineering

October 2015-April 2021: Associate Professor of Applied Physics

February 2005-October 2015: Assistant Professor of Applied Physics

March 1999: PhD in Physics from Bologna University

July 1993: MSc (Italian "Laurea" degree) in Physics from Bologna University

Coordination activity

- Prof. Ferretti heads the research activity of the fMRI operating unit (https://www.dnisc.unich.it/home-unit-di-imaging-con-risonanza-magnetica-funzionale-5939).
- Prof. Ferretti also heads the Operating Unit "Microscopy, Imaging and Big Data" which is part of the University Research Center "UdA-TECHlab" of the University of Chieti-Pescara.

Bibliometric scores (Scopus): H index: 44; Total citations: 6114 (5148 excluding self-citations); More than 140 publications on peer-reviewed international journals. ORCID ID: 0000-0002-8459-0129

Research activity

Prof. Antonio Ferretti works at Institute for Advanced Biomedical Technologies (ITAB) of Chieti-Pescara University since 1999. He has been deeply involved in functional magnetic resonance imaging (fMRI) with Blood Oxygen Level Dependent (BOLD) contrast, studying both the biophysical features of the BOLD signal and its application to many experiments in both clinical and basic neuroscience research. Part of his activity has also been devoted to the integration of fMRI with magnetoencephalography (MEG) and electroencephalography (EEG). Prof. Ferretti has also been involved in a large multicentric study (Pharmacog), for the optimization/standardization of MRI sequences and the quality assurance procedures for the 3T MRI scanner operating at ITAB. His recent interests involve the investigation of different fMRI approaches using multi-echo EPI and more quantitative fMRI approaches using Arterial Spin Labeling (ASL).

Main Collaborations (past and present)

- KU University of Leuven, Belgium
- Russell H. Morgan Department of Radiology and Radiological Science, The Johns Hopkins University School of Medicine, Baltimore, MD, USA
- Center for Mind/Brain Sciences (CIMEC), University of Trento, Rovereto, Italy
- Institute of Mental Health Research, University of Ottawa, Ottawa, Ontario K1Z 7K4, Canada
- Department of Clinical-Surgical, Diagnostic and Pediatric Sciences, University of Pavia - Strada Nuova, 65, 27100 Pavia, Italy
- Faculty of Medicine, Masaryk University, Žerotínovo nám. 617/9, 601 77 Brno, Czech Republic
- BRUNEL UNIVERSITY LONDON, Kingston Lane, Uxbridge UB8 3PH, United Kingdom.
- OLEA MEDICAL S.A.S., Z.I. Athelia IV - 93 avenue des Sorbiers, 13600 La Ciotat, France.
- University College London, 26 Bedford Way, WC1H 0DS London, UK

Previous National and International Research Projects and Funding

- Local PI (fMRI lab supervisor of the operating unit University of Chieti-Pescara) for the multicentric project "the neurophysiology of sudoku", (2009-2010) in collaboration with IRCCS Fatebenefratelli of Brescia. Funding assigned to the unit: 12000 Euros.
- Supervisor of the fMRI lab of the operating unit University of Chieti-Pescara of the european multicentric project "PharmaCog". The project aims at studying brain connectivity in AD and the effects of new pharmacological treatments on cognitive functions using advanced imaging techniques. Funding assigned to the unit: 30000 Euros.
- Scientific supervisor for sequence optimization/development and fMRI/DTI data acquisition and analysis, for the research agreement between "IRCCS Istituto Neurologico Mediterraneo Neuromed" in Pozzilli (IS) and the Department of Neuroscience, Imaging and Clinical Sciences, University of Chieti-Pescara (2013-2014). Funding assigned to the Department: 60000 Euros.
- Scientific supervisor of the project "Intersubject variability of the endogenous analgesia expressed by conditioned pain modulation and phenotypical characterization of the nociceptive profile in humans. A cortical-brainstem connectivity study", funded in 2017 with 40000 Euros by an EFIC-GRUNENTHAL GRANT.
- Scientific supervisor of the project "Development and implementation of an innovative software for assisted diagnosis based on advanced algorithms and image processing techniques" funded in 2016 with a PhD scholarship (call "PON Dottorati Innovativi con caratterizzazione industriale - XXXII ciclo" of the Italian Ministry of Education, University and Research).
- Principal Investigator of the EU project "Mixed reality for brain functional and structural navigation during neurosurgery" funded by the EC in 2019 with 100000 Euros (ATTRACT Call, https://attract-eu.com/consortium/, GRANT agreement 777222).
- Responsible of the work package 3 related to imaging database handling in the project "Innovation, digitalisation and sustainability for the diffused economy in Central Italy (Vitality)" funded by the National Recovery and Resilience Plan (NRRP). Managed funding: 1500000 (1.5M) Euros.
- Government funding (italian ex 60%): 100000 Euros (2009-2021).
- Principal Investigator of the project PRIN-PNRR 2022 "Multimodal MRI investigation of novel neuroimaging biomarkers of SUDEP risk". Budget 239759 Euros.

Supervised PhD theses

- 2008: "Motor Imagery and Action Observation to study Mental Representations".
- 2008: "Evaluation of the hemodynamic signal elicited by a tactile recognition and working memory task: an fMRI study".
- 2011: "Temporal and spatial patterns of male sexual inhibition: an fMRI study".
- 2013: "Sensitivity of BOLD fMRI response to graded visual contrast: a comparison of spin echo and gradient echo EPI acquisition".
- 2018: "Effect of manual approaches with osteopathic modality on brain correlates of interoception: an fMRI study".
- 2020: "Investigating cardiac pulsatility in the brain with fMRI methods as a use case of a technology transfer project".
- Started in 2023: "Implementation of advanced methods for the analysis of the central autonomic system using fMRI data".
- Started in 2023: "Development of methods of the analysis of complex functional and structural MRI data, also based on AI approaches".

Stages

- 2004 advanced fMRI course "MGH-NMR / Martinos Center Visiting Fellowship Program in Functional MRI", tenuto a Boston (USA).
- 2008 advanced pulse programming course for the implementation of new MRI acquisition sequences on Philips scanners, at ETH, Zurich.

Prizes and awards

- Journal of Digital Imaging (JDI) Award *Best Scientific Paper of the year*, assigned to the paper "A Dedicated Tool for Presurgical Mapping of Brain Tumors and Mixed-Reality Navigation During Neurosurgery". J Digit Imaging. 2022 Jun; 35(3):704-713. Authors: Chiacchiaretta P, Perrucci MG, Caulo M, Navarra R, Baldiraghi G, Rolandi D, Luzzi S, Del Maestro M, Galzio R, Ferretti A, during the annual meeting of Society for Imaging Informatics in

Medicine (SIIM) 14-16 June 2023, Austin, Texas (https://siim.org/page/jdi_awards).

- Best Poster Award for the work "Enhanced Gray Matter Specificity of Integrated Local Correlation Mapping Using Multi-Echo fMRI" presented at the IX National Congress of Bioengineering of the italian Gruppo Nazionale di Bioingegneria (GNB), Palermo 2025.

Reviewer and editorial activity

- Reviewer for several neuroimaging and neuroscience journals, including: NeuroImage; Human Brain Mapping; Psychiatry Research: Neuroimaging; Autonomic Neuroscience: Basic and Clinical; Journal of Neuroscience; Frontiers in Human Neuroscience.
- Associate editor for the Brain Imaging and Stimulation section of Frontiers in Human Neuroscience.

Membership (past and present)

Organization for Human Brain Mapping (OHBM), International Society for Magnetic Resonance in Medicine (ISMRM), Institute of Electrical and Electronics Engineers (IEEE), Gruppo Nazionale Bioingegneria (GNB).

National and International meetings

Prof. Ferretti attended the main international and national meetings in the field with several contributions as oral or poster presentations:

- "Organization for Human Brain Mapping" international meetings: 1999, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2012, 2014, 2016, with several communications.
- "International Society of Magnetic Resonance in Medicine (ISMRM)" meetings: 2008, 2011, 2018, 2020.
- "ISMRM Italian Chapter - Risonanza Magnetica in Medicina: dalla ricerca tecnologica avanzata alla pratica clinica", annual meetings: 2011, 2012, 2013, 2016.
- "BIOMAG" international meetings: 2002, 2004, 2006.
- "Noninvasive Functional Source Imaging (NFSI)" international meetings: 2001, 2003, 2005, 2009.
- "International Society for Brain Electromagnetic Topography (ISBET)" international meetings: 2002, 2006.
- "European Medical and Biological Engineering Conference (EMBEC)" international meetings: 2002.

Invited talks

- "Basi fisiche della Risonanza Magnetica Funzionale" for the "Scuola AIP in Metodologia delle neuroscienze e imaging"; 2012, Chieti (Italy).
- "Tools for measuring CNS responses: fMRI, DTI, MRS", for the 3° International Conference of Osteopathic Medicine, "Neurological Aspects of Osteopathic Medicine"; 2013, Pescara (Italy).
- "Le tecniche BOLD" for the "Imaging Funzionale In Neuroradiologia" course, 2011, 2012, 2013, 2015; Chieti (Italy).
- "Principi fisici e fisiologici della risonanza magnetica funzionale" for the "Scuola di fisiologia e biofisica della SIF"; 2014, Chieti (Italy).
- "Interpretazione biofisica dei segnali di risonanza magnetica funzionale, vantaggi e limiti", for the Joint Seminars, IRCCS Fondazione C. Mondino - IRCCS Fondazione S. Maugeri; 2015 Pavia (Italy);
- "Tecnica DTI, ASL", "Tecnica BOLD", "Analisi dei dati funzionali BOLD, ASL, DTI" nell'ambito del Corso "Imaging strutturale e funzionale del cervello anziano: dal "normale" al patologico"; 2015, Chieti (Italy).
- "RM-funzionale: ASL vs BOLD", nell'ambito del IV Congresso Nazionale di Neuroradiologia Funzionale; 2017, Parma (Italy).
- "Interpretation of BOLD fMRI signals", seminar given for the PhD course "Health and Technology"; 2023, University of Bologna, Bologna (Italy).

Transfer of knowledge/Spin-off

Prof. Ferretti has been involved in the creation of the academic Spin-Off "SerVE" (SERvices Viewing Engineering) S.R.L. The main activity of the company is the R&D of hardware and software systems for the storage, processing, visualization and computer aided diagnosis based on medical imaging data.

Institutional responsibilities

- Board member of the Institute for Advanced Biomedical Technologies (ITAB) of Chieti-Pescara University (2008-2022).
- Board member of the University Research Center "UdA-TECHlab" of the University of Chieti-Pescara (2022-present).
- (2008-present) Member of the teaching staff for different PhD programs activated by the University of Chieti-Pescara ("Neuroscience and Imaging", "Functional Neuroimaging: Tools, Methods and Models for the Study of Mind-Brain-Behavior Relationships", "Functional Neuroimaging: from Cells to Systems", "Engineering Science")

Teaching activity

Prof. Ferretti has carried out an extensive teaching activity at University of Chieti-Pescara since 2004, on applied physics, biomechanics, basic computer science and bioengineering courses for students of the biomedical area (Medicine, Nursing, Motor Science, Biomedical Engineering).

Chieti, 26/10/2026 **Antonio Ferretti**

