

Margherita Mottola

Work permit: [REDACTED] Nationality: [REDACTED] Date of birth: [REDACTED] Place of birth:

[REDACTED] Gender: [REDACTED] Phone: [REDACTED] Email

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[REDACTED]

ABOUT MYSELF

Proactive, curious, and ambitious.

Extreme care of details, often looking for the Why, without ever losing the overview.

Very good ability to define objectives, timeline, and strategies.

WORK EXPERIENCE

Alma Mater Studiorum University of Bologna - Italy, Bologna

Postdoctoral Research Fellow

[01/01/2021 - Current]

2024 - ongoing @ Pathology Unit, "Maggiore" Hospital, Bologna, Italy

- Development of an artificial intelligence software (TRL 7) to quantify immune cells in bright-field multiplex immunohistochemistry digital slides
- Development of machine learning algorithms to predict serrated lesions in digital slides of colorectal biopsies

2022-2023 @ Department of Radiology, IRCCS Azienda Ospedaliero Universitaria di Bologna - Policlinico di Sant'Orsola

Quantitative image analysis, even by machine learning methods, of multiparametric Magnetic Resonance Imaging (mpMRI), CT, and Positron Emission Tomography (PET)/CT images for developing imaging predictive and prognostic biomarkers of prostate, rectal and liver cancer

2021 @ Advanced Research Center on Electronic Systems (ARCES)

Development of a unified framework for the reproducibility of hepatic perfusion parameters arising from the quantitative image analysis of Computed Tomography (CT) perfusion sequences

Scientific and teaching activities

- Writing of research grant proposals
- Coordination of research activities with multidisciplinary collaborators
- Writing of research articles and oral dissemination of scientific results
- Supervision of MS and PhD students

IRET Foundation - Italy, Ozzano dell'Emilia

Research Collaborator

[01/01/2024 - Current]

Quantitative analysis of light-sheet microscopy images of mouse brain for 3D reconstruction and structural characterization of microvessels

PROFESSIONAL QUALIFICATION

[11/2021]

Professional qualification as Engineer

no expiration date

EDUCATION & TRAINING

Ph.D. in Biomedical, Electrical, and System Engineering - curriculum Bioengineering

Alma Mater Studiorum University of Bologna [21/05/2021]

City: Bologna | Country: Italy

Field(s) of study: New methodologies in CT perfusion and MRI analysis to develop cancer imaging biomarkers

Master Degree in Biomedical Engineering (110/110 with honours)

Alma Mater Studiorum University of Bologna [16/03/2017]

City: Cesena (FC) | Country: Italy

Field(s) of study: Computation of hepatic perfusion parameters in Computed Tomography (CT) examinations by means of a dual-input mono-compartmental model

Bachelor Degree in Biomedical Engineering (110/110 with honours)

Alma Mater Studiorum University of Bologna [11/12/2014]

City: Cesena (FC)

Field(s) of study: Development and optimization of algorithms to predict the Cardiac Resynchronization Therapy's response

Academic internship

"M. Bufalini" Hospital – Dept. of Cardiology [08/2014 - 11/2014]

City: Cesena (FC) | Country: Italy

Field(s) of study: Clinical field trainee in electrophysiology, 167h

Secondary school-leaving certificate in scientific subjects (100/100 with honours)

I.I.S.S. Liceo Scientifico "L. Da Vinci" [2011]

City: Noci (BA) | Country: Italy

RESEARCH ACTIVITIES

[02/2020 - 04/2020]

Visiting Researcher

University of Cambridge (United Kingdom, UK) Addenbrooke's Hospital, Dept. of Radiology, Cambridge, UK
Reproducibility study of radiomic features in CT examination of renal cell carcinoma (Supervisor: Prof. E. Sala)

[12/2018 - 01/2019]

Research Assistant

ARCES, University of Bologna

Software development for parametric fitting of aortic signals in hepatic CT perfusion (Supervisor: Prof. A. Bevilacqua)

[12/2017 - 01/2018]

Research Assistant

ARCES, University of Bologna

Software development for signals deconvolution of hepatic CT perfusion (Supervisor: Prof. A. Bevilacqua)

[05/2017 - 10/2017]

Research fellow

ARCES, University of Bologna

Study and development of a simulator aiming at the computation of perfusion parameters in Computed Tomography (CTp) and Magnetic Resonance (MRp) examinations (Supervisor: Prof. A. Bevilacqua)

[10/2016 - 12/2016]

Visiting Researcher

Université Paris VII "D. Diderot" (France, FR) Hôpital Beaujon, Département de Radiologie Clichy, Paris (Fr)
Computation of perfusion parameters in Computed Tomography (CTp) examinations in hepatic oncology (Supervisor: Prof. V. Vilgrain)

COLLABORATIONS

[01/2024 - Current]

Pathology Unit, "Maggiore" Hospital, Bologna, Italy

[09/2016 - Current]

ARCES, University of Bologna

[2018 - 2022]

IRCCS Istituto Scientifico Romagnolo per lo Studio e la Cura dei Tumori (IRST), Meldola (FC)

[2016 - 2023]

Université Paris VII "D. Diderot" (FR) Hôpital Beaujon, Département de Radiologie Clichy, Paris

[2020 - 2021]

University of Cambridge Addenbrooke's Hospital, Department of Radiology, Cambridge, UK

EDITORIAL ROLES

[2022 - Current]

Collection Editor

Topical Collection "Biomedical Imaging and Sensing", Sensors, MDPI, IF (2024): 3.5 (Q2)

[2021 - Current]

Reviewer

Eur. Rad, Springer, IF (2024): 4.7 (Q1)

Insights into Imaging, Springer, IF (2024): 4.5 (Q1)

Sci. Rep., Nature, IF (2023): 3.9 (Q1)

INVITED TALKS

[07/11/2024 - 09/11/2024]

Congresso annuale di Anatomia Patologica SIAPEC-IAP, Giardini Naxos (Italy)

Le frontiere digitali dell'immunoistochimica multipla 20-minute talk

[03/11/2022 - 04/11/2022]

PUBLICATIONS

INTERNATIONAL JOURNALS

1. Mottola M.; Ricci C.; Chiarucci F. et al, Computer-based detection of colorectal serrated lesions: Digital Flatness, a novel metric designed for whole-slide images, *Lab Invest*, 2025; 105(8):104178 doi:10.1016/j.labinv.2025.104178
2. Mottola M.; Golfieri R.; Bevilacqua A., The Effectiveness of an Adaptive Method to Analyse the Transition between Tumour and Peritumour for Answering Two Clinical Questions in Cancer Imaging, *Sensors*, 2024; 24(4):1156 doi:10.3390/s24041156
3. Bevilacqua A.*; Mottola M.*, Letter to the Editor on "Comparative performance of fully-automated and semi-automated artificial intelligence methods for the detection of clinically significant prostate cancer on MRI: a systematic review", *Insights Imaging*, 2023; 14(183) doi: 10.1186/s13244-023-01520-8 (*equal contribution)
4. Gaudio C.*; Mottola M.*; Bianchi, L. et al, An Apparent Diffusion Coefficient-Based Machine Learning Model Can Improve Prostate Cancer Detection in the Grey Area of the Prostate Imaging Reporting and Data System Category 3: A Single-Centre Experience, *Cancers*, 2023; 15(13):3438 doi:10.3390/cancers15133438 (*equal contribution)
5. Cuicchi D.*; Mottola M.*; Castellucci, P. et al, Radiomic Features from post-operative 18F-FDG PET/CT and CT imaging associated with locally recurrent rectal cancer: preliminary findings, *J. Clin. Med.*, 2023; 12(5):2058 doi:10.3390/jcm12052058 (*equal contribution)
6. Gaudio C.*; Mottola M.*; Bianchi, L. et al, Beyond Multiparametric MRI and towards Radiomics to Detect Prostate Cancer: A Machine Learning Model to Predict Clinically Significant Lesions, *Cancers*, 2022; 14(24):6156 doi:10.3390/cancers14246156 (*equal contribution)
7. Renzulli M.*; Mottola M.*; Coppola F. et al, Automatically Extracted Machine Learning Features from Preoperative CT to Early Predict Microvascular Invasion in HCC: The Role of the Zone of Transition (ZOT), *Cancers*, 2022; 14(7):1816 doi:10.3390/cancers14071816 (*equal contribution)
8. Coppola F.; Faggioni L.; Gabelloni M.; [...]; Mottola M. et al, Human, All Too Human? An AllAround Appraisal of the "Artificial Intelligence Revolution" in Medical Imaging, *Front. Psychol.*, 2021; 12(710982) doi:10.3389/fpsyg.2021.710982
9. Coppola F.; Mottola M.; Lo Monaco S. et al. The heterogeneity of skewness in t2w-based radiomics predicts the response to neoadjuvant chemoradiotherapy in locally advanced rectal cancer, *Diagnostics*, 2021; 11(5):795 doi:10.3390/diagnostics11050795
10. Bevilacqua A.*; Mottola M.*; Ferroni F. et al, The primacy of high b-value 3t-dwi radiomics in the prediction of clinically significant prostate cancer, *Diagnostics*, 2021; 11(5):739 doi:10.3390/diagnostics11050739 (*equal contribution)
11. Mottola M.; Ursprung S.; Rundo L. et al, Reproducibility of CT-based radiomic features against image resampling and perturbations for tumour and healthy kidney in renal cancer patients, *Sci. Rep.*, 2021; 11(1):11542 doi:10.1038/s41598-021-90985-y
12. Mottola M.; Bevilacqua A, Reproducibility of Computed Tomography perfusion parameters in a multicentre study of liver in patients with colorectal cancer, *Biomed. Signal Proc. Control*, 2021;64:102298 doi:10.1016/j.bspc.2020.102298

CONFERENCES

Extended posters on conference proceedings

1. Mottola M.; Bevilacqua A.; Ferroni F. et al, Prostate cancer staging based on high b-value diffusion weighted magnetic resonance imaging, in: *Proceedings of the 18th IEEE International Symposium on Biomedical Imaging (ISBI)*, Nice (France), April 13-16, 2021, pp. 1386 – 1389
2. Bevilacqua A.; Mottola M., Colormaps of CT perfusion parameters computed using different methods visually match, in: *Proceedings of the 16th IEEE International Symposium on Biomedical Imaging (ISBI)*, Venice (Italy), April 8-11, 2019, pp. 1769 – 1773
3. Bevilacqua A.; Mottola M., Analysis of the effects of fitting errors of DCE-CT signals on perfusion parameters, in: *Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS)*,

Abstract as extended posters

1. Mottola, M.; Ambrosi, F.; Ricci, C. et al, Deep Learning–Based Analysis of the Tumor Immune Microenvironment Using Brightfield Multiplex Immunohistochemistry, 2026; 115th United States and Canadian Academy of Pathology (USCAP) annual meeting (accepted)
2. Ambrosi, F.; Mottola, M.; Ragazzi, M. et al, IMPACTS Study: Independent-validation of Modified Pulmonary Adenocarcinoma Classification on T Stage, 2026; 115th United States and Canadian Academy of Pathology (USCAP) annual meeting (accepted)
3. Peraino, R.; Franceschini, T.; Ambrosi, F. [...] Mottola, M., A cutting-edge software technology to automatically quantify brightfield multiplex immunohistochemistry in penile carcinoma, *Virchows Archiv* 2024; 485(Suppl 1):S1-S546, 36th European Congress of Pathology
4. Errani, M.; Ambrosi, F.; Franceschini, T. [...] Mottola, M., Informatics and digital pathology in nonsmall cell lung cancer: automatic quantification of brightfield multiplex immunohistochemistry, *Virchows Archiv* 2024; 485(Suppl 1):S1-S546, 36th European Congress of Pathology
5. Mottola M.; Ferroni F.; Barone D. et al, A radiomic signature for detecting prostate cancer with multi-parametric MRI, in: ePoster of the 32nd European Congress of Radiology (ECR 2020), 2020, pp. 1 – 11
6. Bevilacqua A.; Ferroni F.; Mottola M., et al, Predicting clinical evolution of prostate cancer in active surveillance: early suggestions from DW-MRI, in: ePoster of the 32nd European Congress of Radiology (ECR 2020), 2020, pp. 1 – 11
7. Bevilacqua A.; Mottola M., A patient-driven approach to improve reproducibility of blood flow values in CT perfusion of liver, in: ePosters of the 31st European Congress of Radiology, Wien (Austria), Feb. 27-Mar. 3, 2019, pp. 1 – 11
8. Bevilacqua A.; Mottola M.; Vilgrain V., Blood flow assessment of liver in patients with colorectal cancer: results agreement in a Computed Tomography perfusion multicentre study, in: ePosters of the 31st European Congress of Radiology, Wien (Austria), Feb. 27-Mar. 3, 2019, pp. 1 – 11
9. Bevilacqua A.; Mottola M., Extracting equilibrium Blood Flow (eBF) values of CTp liver perfusion from tissue peak: a new promising perfusion parameter, in: ePosters of the 31st European Congress of Radiology, Wien (Austria), Feb. 27-Mar. 3, 2019, pp. 1 – 11
10. Bevilacqua A.; Mottola M.; Vilgrain V., Skewness of HPI as a suggestive biomarker to predict development of liver metastases in patients with colorectal cancer, in: ePosters of the 31st European Congress of Radiology, Wien (Austria), Feb. 27-Mar. 3, 2019, pp. 1 – 11
11. Mottola M.; Ferroni F.; Togni R. et al, Comparison of 68Ga-PSMA SUVmax and tumour heterogeneity in DW-MRI, in: Proceedings of the XIV Annual meeting of the Italian Nuclear Medicine and Molecular Imaging Association, Rimini (Italy), April 11-14, 2019, pp. 1 – 1
12. Bevilacqua A.; Mottola M.; Vilgrain V., CT perfusion maps of liver computed with different methods match, in: ePosters of the 30th European Congress of Radiology, Wien (Austria), Feb. 28-Mar. 4, 2018, pp. 1-9
13. Bevilacqua A.; Mottola M., Errors of a controlled Time-Concentration Curve fitting in CT perfusion uniformly affect perfusion values computed with two different methods, in: ePosters of the 30th European Congress of Radiology, Wien (Austria), Feb. 28-Mar. 4, 2018, pp. 1-9

Oral presentations (abstracts)

1. Bevilacqua A.; Mottola M.; Ferroni F.; Barone D.; Gavelli G., Diffusion weighted imaging in prostate cancer: a descriptor of tumour habitat differentiates high-risk and low-risk lesions, «INSIGHTS INTO IMAGING», 2020, 11, pp. 131 – 131
2. Bevilacqua A.; Mottola M.; Ferroni F.; Gavelli G.; Barone D., mpMRI detection of suspected prostate cancer with a negative biopsy: can radiomic features help radiologists?, «INSIGHTS INTO IMAGING», 2020, 11, pp. 492 – 493
3. Mottola M.; Ferroni F.; Barone D. et al, Prostate cancer heterogeneity in high b-value DWI correlates with [68Ga]-PSMA PET/CT: preliminary results, «INSIGHTS INTO IMAGING», 2020, 11, pp. 326 – 327
4. Bevilacqua A.; Mottola M.; Ferroni F.; Gavelli G.; Barone D., Radiomics in DW-MRI detects non-clinically

- significant prostate cancer and reduces overtreatment, «INSIGHTS INTOIMAGING», 2020,11, pp. 185 - 185
5. Mottola M.; Ferroni F.; BaroneD;GavelliG.; Bevilacqua A., Risk stratification of patients with prostate cancer: promising results with high b-value DWI radiomic features, «INSIGHTS INTO IMAGING», 2020, 11, pp. 490 - 490
 6. Bevilacqua A.; Coppola F.; Mottola M., et al, Heterogeneity of skewness in T2w-MR images of locally advanced rectal cancerrelates with response to neoadjuvant chemoradiotherapy, «INSIGHTS INTO IMAGING», 2021, 11, pp. 1 – 11
 7. Bevilacqua A.; Coppola F.; Mottola M. et al, Radiomic features disclose the presence of microvascular invasion in hepatocellular carcinoma, «INSIGHTS INTO IMAGING», 2021, 11, pp. 1 - 11
 8. Mottola M.; Bevilacqua A.; Ferroni F. et al, To assess the role of radiomic features from high b-value DWI sequences in the early detection of clinically significant prostate cancer (PCa), «INSIGHTS INTO IMAGING», 2021, 11, pp. 1 - 11
 9. Mottola M.; Renzulli, M; Coppola F. et al, L'intelligenza artificiale nella diagnosi precoce dell'invasione microvascolare nell'epatocarcinoma in stadio iniziale, 50th Congress of Società Italiana di Radiologia Medica ed Interventistica (SIRM), Rome, Italy, Oct. 6-9, 2022
 10. Mottola M.; Coppola F.; Renzulli M. et al, Le proprietà nascoste nell'imaging RM per rilevare automaticamente la zona di transizione tra carcinoma rettale localmente avanzato e tessuto sano, e predire la risposta alla terapia neo-adiuvante, 50th Congress of Società Italiana di Radiologia Medica ed Interventistica (SIRM), Rome, Italy, Oct. 6-9, 2022
 11. Bianchi L.; Gaudiano C.; Mottola M. et al, Beyond multiparametric MRI and towards radiomics to detect prostate cancer: a machine learning model to predict clinically significant lesions, 38th Annual European Association of Urology (EAU) Congress, Eur Urol Suppl, 2023, 83(S1):S1404

COURSES AND EVENTS

[03/05/2017 - 05/05/2017]

Introduction to scientific and techincal computing in C

CINECA, Rome, Italy

[25/09/2017 - 27/09/2017]

Trieste Next, European exhibition of scientific research

Trieste, Italy

[01/2016 - 10/2016]

Training course of security in working areas

University of Bologna, Bologna, Italy

[04/10/2009 - 10/10/2009]

Comenius Project "Eco-Sport, Eco-Culture and ICT"

Escola "A. Cabrita", Barreiro, Portugal

[27/02/2009 - 05/03/2009]

Comenius Project "Eco-Sport, Eco-Culture and ICT"

Gimnazjum " Z. N. Polskiego", Lodz (Poland)

HONOUR AND AWARDS

GRANTS

- 3-year-Scholarship for PhD programme (Euro 48.303,84), Nov. 2017–Dec. 2020, Ministry of Education, Universities and Research (Italy)

- Marco Polo Grant for Research Period abroad (Euro 3450), Feb.–Apr. 2020, University of Bologna (Italy)
- Grant for Master's Thesis research abroad (Euro 1000), Oct. 2016, University of Bologna (Italy)

SCHOLARSHIP AND CERTIFICATE OF MERIT

- Merit Scholarship (Euro 2000) May 2018, 2017, 2016, National social welfare institution (Italy)
- Merit Scholarship for Scientific Qualification (Euro 500), Dec. 2011, Ministry of Education, Universities and Research (Italy)
- Certificate of merit for academic studies, June 2013, July 2014, Rector of the University of Bologna (Italy)

PERSONAL

- 2nd prize at the 1st National Music Competition "Premio Musica Italia", piano-solo section April 2005, Barletta (BAT), Italy
- 2nd prize at the 8th National Music Competition "Giovani Musicisti", piano-solo section May 2004, Giovinazzo (BA), Italy
- 1st prize at the 5th European Music Competition, piano-solo section April 2004, Altamura (BA), Italy

LANGUAGE SKILLS

Mother tongue(s): Italian

English

LISTENING: B2 **READING:** C1 **WRITING:** C1

SPOKEN PRODUCTION: B2

SPOKEN INTERACTION: B2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user

SKILLS

Artificial Intelligence | Machine Learning | Medical image processing | Matlab | Python | Windows | Linux | DICOM | Computed Tomography | Magnetic Resonance Imaging | Positron Emission Tomography | Microscopy | Git | Deep Learning

DRIVING LICENCE

Driving licence: B

Margherita Mottola

Bologna, Italy, 22/12/2025

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