

Optimization of AI-driven predictivity and confirmation systems for planning and monitoring imaging guided therapies of liver tumors

Supervisor: Prof. Chiara Floridi

Department of Odontostomatologic and Specialized Clinical Sciences

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Research Group Description: the Supervisor

Supervisor: Prof. Chiara Floridi

Associate Professor in Radiology, DISCO, UNIVPM, Chair of General and Special Radiology course of Dentistry and Orthodontics degree program based in the Faculty of Medicine, Università Politecnica delle Marche and Interventional Radiologist in Azienda Ospedaliero-Universitaria delle Marche.

Supervisor of Medical students and radiology fellows.

More than **100 peer-reviewed research articles** with about 2,000 citations received <u>https://orcid.org/0000-0002-6863-9471</u> (<u>https://www.scopus.com/authid/detail.uri?authorId=54969549000</u>, H-index = 27 according to Scopus). More than 10 years of clinical and research activity in **Interventional and Diagnostic Radiology** with special emphasis on **Interventional Radiology Oncology**.

Head of Computed Tomography Italian **Computed Tomography Subspecialty Section of the Italian Society of Medical and Interventional Radiology.** Involved in several national and international projects with great experience ininternational and multicentre studies.







Research Group Description: the Group

Director: Prof. Andrea Giovagnoni

Diagnostic and Interventional Radiology Departments Azienda Ospedaliero-Universitaria delle Marche

STAFF: The group is currently formed by a **full Professor, four** Associate Professors and four Researchers

RESEARCH ACTIVITY

Our research group is at the forefront of precision imaging, driving innovation in oncology imaging and image-guided interventional oncology (IO). We specialize in cutting-edge AI-driven imaging analysis, developing next-generation tools for enhanced interpretation, prediction, and optimization of IO treatments. By integrating advanced AI models with imaging technologies, we aim to revolutionize personalized treatment strategies, improving precision, efficiency, and patient outcomes. Researchers joining our team will contribute to groundbreaking advancements at the intersection of AI, medical imaging, and interventional oncology.



EQUIPMENT

Dual energy Dual Source and Rapid Switching computed tomography scans; three MR 1.5T scanners; one PET-MR 3.0T scanner; two fully equipped angiosuites equipped with Conebeam computed tomography with advanced needle guidance and vessel navigator softwares.

RESEARCH AND PUBBLICATIONS https://orcid.org/0000-0002-5264-652X https://orcid.org/0000-0002-6863-9471 https://orcid.org/0000-0001-7133-8509





The Department of Odontostomatologic and Specialized Clinical Sciences

Director: Prof. Andrea Giovagnoni

The Department, established in 2008, serves as a leading scientific and educational hub dedicated to advancing research, academic excellence, and clinical innovation. The department fosters cutting-edge scientific research, provides high-quality education and training, and actively promotes the dissemination of research findings to both the scientific community and the broader public. Through interdisciplinary collaboration, it contributes to the development of innovative approaches in oral health, specialized clinical sciences, and patient-centered care.

Researchers will benefit from **interdisciplinary collaboration**, **cutting-edge facilities**, **and high-impact projects**. The department prioritizes training, mentoring, and career development, offering tailored educational programs and networking opportunities with the Medical Association. Committed to scientific excellence and innovation, it provides an ideal environment to advance healthcare and make a lasting impact.





Project Idea:

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Backgroud: Liver malignancies are extensively treated with interventional oncology procedures. Depending on tumor characteristics, vascular anatomy, and patient-specific factors, both endovascular (chemoembolization, radioembolization) and percutaneous (thermal ablation) approaches are employed to achieve optimal therapeutic outcomes. Key challenges in these treatments is ensuring precise planning and real-time monitoring to achieve complete tumor coverage

Project Overview:

This project aims to enhance **AI-powered predictive models** and **real-time confirmation systems** to improve planning, execution, and monitoring of **imaging-guided therapies for liver tumors**. By integrating **multi-modal imaging data** with advanced **AI algorithms**. The project will refine treatment **personalization**, **optimize decision-making**, and **enhance therapeutic outcomes**.

Project OBJECTIVES:

- Develop and optimize AI-driven models for predicting treatment response in liver tumor therapies.
- Enhance real-time confirmation systems to support interventional radiologists in decision-making.
- Integrate multi-omics and imaging data to refine predictive accuracy.
- Improve AI interpretability and clinical usability for personalized therapy planning.





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Candidates with experience in precision imaging in radiology and in advanced imaging guidance tools in interventional radiology are encouraged to apply. This opportunity is ideal for individuals who value interdisciplinary collaboration and are dedicated to developing innovative solutions for pre and postprocedural imaging applications.

Other backgrounds relevant to the supervisor's expertise and project objectives will also be considered and evaluated.

