PhD Thesis at Inria
on
"Effective AI based Characterization of Prostate Cancer from Multiparametric MRI"

Context:

Prostate cancer is one of the most common cancers affecting men in developed countries. Multiparametric Magnetic Resonance Imaging (mp-MRI), which involves the combined analysis of multiple MR sequences, is now regarded as the most accurate imaging method for detecting prostate cancer. However, a significant barrier to its widespread use as a diagnostic tool is the extensive training required for radiologists to perform accurate analyses.

This challenge has driven the development of decision support systems to assist radiologists in detecting, characterizing, and monitoring prostate cancer lesions. For several years, computer scientists from Inria and radiologists from Paris Hospitals have been collaborating to address this issue, notably by creating two large, high-quality databases of mp-MR images. This PhD is part of the French national AICOO project, which brings together several innovative companies and both public and private clinical centers.

Phd Topics:

The goal of this thesis is to develop advanced machine learning solutions for the automatic characterization of prostate lesion malignancy using multiparametric Magnetic Resonance Imaging. This will involve evaluating the image quality required to achieve accurate predictions from AI algorithms and calibrating the confidence levels of those predictions. Additionally, the thesis will investigate the integration of specific clinical information with mp-MRI data to enhance algorithm performance. Ultimately, the research aims to provide interpretable image analysis to ensure that the results are reliable and accessible for practitioners.

Practical Information: This 3-year PhD thesis will be supervised by Dr Hervé Delingette within the Epione team at Inria, Sophia Antipolis, France in close collaboration with radiologists at Paris Hospitals. Competitive salary with comprehensive social benefits (national healthcare, health insurance, etc.), along with a dynamic and stimulating work environment.

Required Skills

- Master degree with strong competences in statistical learning and mathematical modeling, as well as knowledge in medical imaging, signal and image processing (Master 2 level).
- Solid programming and IT skills are necessary (Python and C++, bash scripting, version control systems).
- Strong communication abilities with fluent English (written and spoken)

Contact Person:

Send a CV and motivation letter to:
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