

PhD Thesis at Inria

on

“Effective AI based Detection of Prostate Cancer from Multiparametric MRI”

Context: Prostate cancer is among the most frequent male cancers in developed countries. Multiparametric Magnetic Resonance Imaging (mp-MRI) encompassing the joint analysis of several MR sequences is now recognized to be the most accurate imaging modality in the detection of prostate cancer. Yet, a major impediment for its wider use as a diagnosis tool, is that it requires a lot of training for radiologists to make a proper analysis. This is why a joint team of computer scientists from Inria and radiologists Paris Hospitals has launched [a research project](#) to assist radiologists in the interpretation of mp-MRI through machine learning. In particular this has led to the creation of two large high quality databases of mp-MR images.

Phd Topics: The goal of the thesis is to develop **effective machine learning solutions** to automatically detect significative prostate lesions from multiparametric Magnetic Resonance Imaging. In particular, this requires to exploit the temporal dimension of perfusion images and to assess the quality of images necessary to obtain good prediction from AI algorithms. Furthermore, it is essential to provide interpretable or explainable solutions for the lesion detection in order to make their use by practitioners trustworthy. More specifically, approaches for the generation of explanatory text from lesions in MR images will be explored. The thesis will leverage on the ongoing [PAIMRI](#) and [DAICAP](#) projects and their research outcomes.

Practical Information: This 3-year PhD thesis will be supervised by Dr H. Delingette within the [Epione team](#) at Inria, Sophia Antipolis, France in close collaboration with radiologists at Paris Hospitals. The scholarship is funded by the French AI Institute [“3iA Côte d’Azur”](#) which also provides a high quality collaborative environment. Gross monthly salary around 2650€.

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
- Fluent English (written and spoken)

Contact Persons:

Send a CV and motivation letter to:

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