

Phd Thesis at Inria Sophia Antipolis on “AI & Machine Learning Methods to select Imaging & Biological markers predictive of Immunotherapy Response in Lung Cancer ”

Context : Anti-cancer immunotherapy is a very promising cancer treatment that helps the immune system fight cancer. In particular, immune checkpoint inhibitors are drugs that can block the proteins that prevent the action of some immune system cells against cancer cells. Immunotherapy has led to some impressive therapeutic benefits on some cancers but is also known to be effective only on a subset of the cancer patients and can lead to severe side effects. This is why improving the patient selection is key to immunotherapy success.

Phd Topics : The goal of the thesis is to study and **extract features both in medical images (from radiological and pathological features) and biological samples** in order to help clinicians select lung cancer patients for anti-cancer immunotherapy. This work will be based on unique imaging and biological databases acquired at the [Cancer Research and Aging Institute](#) (IRCAN) and the Nice University Hospital of Nice. The objective is to combine the extraction of imaging features (texture, structural indices, types of pulmonary nodules) from CT Lung images with biological markers extracted from blood or tumor tissue samples.

The objective of the thesis is therefore to develop AI and **machine learning algorithms** that can select the best imaging and biological markers predictive of the response to Immunotherapy in the case of lung cancer.

Localisation : This thesis will take place within the [Epione team](#) at Inria Sophia Antipolis and the [Cancer Research and Aging Institute](#) (IRCAN) and in collaboration with the University Hospital of Nice.

Required Competences

- 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), biology.
- 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:

Please send a resume and motivation letter to:

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