Post-doc position - Rennes University

LTSI - INSERM 1099

The LTSI laboratory (INSERM 1099) opens a postdoc position in the field of computational modeling, clinical data analysis and machine-learning, funded by the European project SMASH-HCM.

Context

Hypertrophic cardiomyopathy (HCM) is the most common form of genetic heart disease, characterized by thickening of cardiac walls, increasing risks of arrhythmia, and represents a major cause of sudden cardiac death (SCD), particularly in the young population, with a risk of about 1% per year. Identification of patients at risk is still a major clinical challenge and novel methodological tools should be proposed in order to improve disease management.

Goal

The main objective is to address the multifactorial nature of the disease, by analyzing clinical databases composed of HCM patients, with different levels of risk, in order to identify novel potential markers for risk stratification. The objective of the proposed approach will be to develop multiscale dynamic vascular and multiorgan modelling and simulation tools to capture vascular and multiorgan mechanisms for deep phenotyping in HCM. The autonomic function in HCM will be especially evaluated through methods capturing heart rate complexity and variability. Hybrid methodology, combining *in silico* models and signals processing, will be proposed. Model analysis methods will be used to study the autonomic mechanisms regulating the mechanical and circulatory functions of the cardiovascular system in this population and *in silico* patient-specific model-based features will be extracted. Finally, multivariate approaches, based on supervised and unsupervised machine learning methods, will be proposed to define robust classifiers capable of identifying patients at high risk. This will enable the prediction of adverse events and prognostic outcomes and improve therapy choices.

Profile

We are looking for a highly motivated postdoctoral scientist with expertise in computational modeling or biomedical data analysis. The applicant will have some skills either in computer sciences, signal processing or applied mathematics. Experience in analysis computational model, machine-learning or numerical computation will be highly appreciated.

Location / Hiring date

Rennes / January 2024 (could be adapted to availability)

Duration - 24 months

Contacts

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