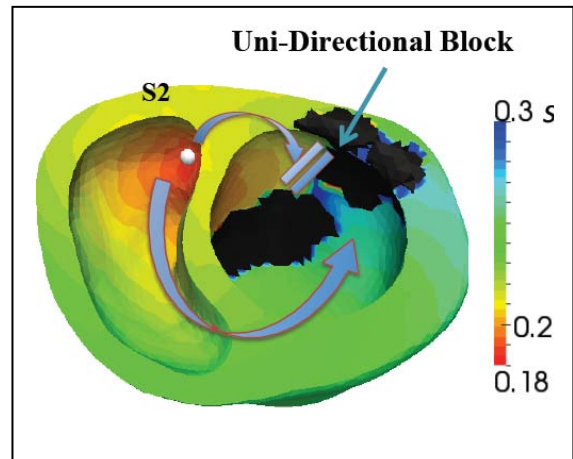


Ph.d. at INRIA Sophia-Antipolis and King's College London on “Computational Modeling of Ventricular Tachycardia for Radiofrequency Ablation Planning”

PhD Topic: The overall goal of the Ph.D. is to provide clinicians with computational tools to plan the radiofrequency ablation (RFA) of the heart's ventricles in case of Ventricular Tachycardia (VT). This cardiac pathology may appear on patients after an infarct episode which modifies the conduction pathways in the ventricles. Depending on the location and nature of infarcted tissue, re-entry currents may occur thus leading to a disordered and accelerated cardiac rhythm. One possible therapy for VT patients is to destroy the cardiac cells responsible for the re-entries through RFA. However, locating those cells is challenging and requires a trial and error process. During this Ph.D., the candidate will investigate detailed computational models of the cardiac electrophysiology and radiofrequency ablation mechanism to propose a planning of RFA for VT patients. It includes the personalization of such models from anatomical and functional Magnetic Resonance Images, as well as electrophysiological measurements from contact and body surface mapping. This thesis will build upon the Phd work of J. Relan[1] and will be partially performed in the context of the euHeart project.



Location : The Ph.D. will be carried out both at the Asclepius research group, INRIA Sophia Antipolis, France and Division of Imaging Sciences and Biomedical Engineering at King's College London, UK.

Scientific Requirement : The candidate should have a Master of Science with strong background in applied mathematics and computer science. Proficient programming (C++) and mathematical skills are essential. Extensive knowledge in numerical analysis, biological modeling, medical image analysis and the knowledge of cardiac imaging and physiology is a plus. Fluent written and spoken English is mandatory.

Contact Persons : send cover letter and CV to Hervé Delingette (INRIA), Nicholas Ayache (INRIA), Reza Razavi (KCL) and Martin Bishop (KCL)

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Reza.Razavi@kcl.ac.uk

[1] Jatin Relan, Phani Chinchapatnam, Maxime Sermesant, Kawal Rhode, Matt Ginks, Hervé Delingette, C. Aldo Rinaldi, Reza Razavi, and Nicholas Ayache. Coupled Personalization of Cardiac Electrophysiology Models for Prediction of Ischaemic Ventricular Tachycardia. Journal of the Royal Society Interface Focus, 1(3):396-407, 2011