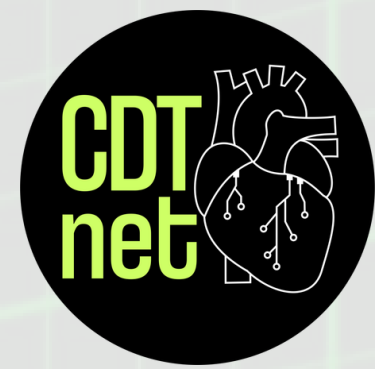


F1 Non-invasive Electro-Anatomical Mapping to Inform Arrhythmia Optimal Ablation



HOST ORGANISATION

Corify Care
(COR), Madrid, Spain

PHD AWARDING INSTITUTION

Universitat Politècnica de València
(UPV), Spain

Supervisory Team

Lead Supervisor

- Prof. María Guillem (Corify Care)

Co-Supervisors

- Dr. Ana Mincholé (Universidad de Zaragoza)
- Dr. Marc Strik (University of Bordeaux / LIRYC Institute)

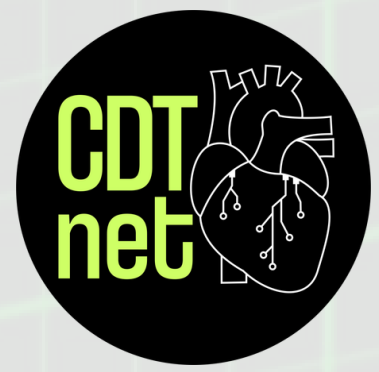
Project Description

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia and remains challenging to treat effectively, with many patients experiencing recurrence after catheter ablation. One reason for this is the difficulty of identifying the specific electrical and structural mechanisms driving arrhythmia in individual patients.

This project will develop a patient-specific cardiovascular digital twin to support the planning and optimisation of AF ablation procedures. The doctoral candidate will combine non-invasive electrocardiographic imaging (ECGi) with late gadolinium-enhanced magnetic resonance imaging (LGE-MRI) to create personalised models of cardiac anatomy and electrophysiology. These models will be used to reconstruct the arrhythmia substrate, simulate treatment strategies and support clinical decision-making.

The project will also investigate how digital twin technology can be integrated into routine clinical workflows and assess its potential to improve treatment planning and patient outcomes. The research will be supported by a unique dataset comprising more than 200 AF patients with ECGi, MRI, invasive mapping data and one-year follow-up information, together with a virtual population of over 30,000 computational heart models.

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Planned Secondments

- University of Bordeaux, France (2 months): advanced mathematical and computational modelling techniques.
- King's College London, United Kingdom (2 months): population-based anatomical modelling and ECGi personalisation.
- IDIBAPS, Spain (2 months): clinical testing and validation in AF ablation workflows.

Desirable Project-Specific Qualifications and Skills

- The candidate must fulfil the admission requirements for doctoral studies at Universitat Politècnica de València: a Bachelor's degree and a Master's degree totalling at least 300 ECTS credits, of which a minimum of 60 ECTS at Master's level, preferably in computer science, applied mathematics, electrical engineering or biomedical engineering. Other degrees can also be considered given that the candidate has formal competence in computing.
- Matlab/Python programming
- Gitlab/Hithub or another relevant environment for software documentation
- Cardiac Electrophysiological modelling

Selection Process

Selection process will include: (1) proven qualifications submitted with the application (i.e. academic degree, language skills degrees, academic manuscripts, etc), (2) performance in a programming test and (3) an on-line interview.

Please direct any query regarding this project to:

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