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Partner Search Form

Horizon Europe Health

Contact :

Organisation :	INSERM
Lab/Unite/Department :	U1254 ; IADI lab
City :	Nancy
Country :	France
Contact person :	Julien OSTER
E-mail :	Julien.oster@inserm.Fr
Website	https://iadi.univ-lorraine.fr/

Short introduction of key areas of institute's research:

Former participation in an FP European project? ~~YES~~/NO

Project title / Acronym:

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Activities performed:

My research activity spans over fifteen years and centers on biomedical signal processing, with electrocardiography (ECG) as a recurring thread across multiple clinical contexts.

A major early strand focused ECG acquisition and denoising in the MRI environment, covering the magnetohydrodynamic effect, independent component analysis and Bayesian filtering approaches, MR-compatible ECG sensors, and cardiac gating — work that bridges signal processing with practical MRI engineering.

A second substantial strand addresses on fetal ECG extraction and quality assessment, including widely cited work on non-invasive fetal ECG algorithms, signal quality indices, and the PhysioNet/Computing in Cardiology challenge on fetal ECG, as well as applications to fetal arrhythmia and QT interval detection.

More recently, my outputs have expanded into deep learning for cardiac abnormality (including analysis of ECG time-series with self-supervised learning for atrial fibrillation detection, generalizable PVC classification, or contractile dysfunction), but also multimodal heart segmentation challenges, or cardiac MRI super-resolution or image reconstruction, and finally PET/MRI radiomics for glioma characterization, reflecting a progression from classical statistical signal processing toward AI-driven, multimodal medical imaging analysis.

Expertise / Commitment offered

Description of your expertise:

My expertise lies at the intersection of artificial intelligence and multimodal cardiac data, with a particular focus on making AI methods robust to the noise, artifacts, and heterogeneity inherent to real-world physiological recordings. This is exemplified by work combining deep learning and self-supervised learning for heartbeat and R-peak detection in ECG acquired during MRI, generative adversarial networks to synthesize realistic MRI-related ECG distortions, and recurrent neural networks for atrial fibrillation burden estimation and sepsis prediction from vital signs.

I have also contributed to large-scale, generalizable AI diagnostic models — such as an atrial fibrillation detection algorithm validated across geography, age, and sex — as well as multi-institutional benchmarking efforts like the multi-modality whole heart segmentation challenge. This combination of signal-level expertise (ECG, MRI-conditional sensors, cardiac MRI) and modern AI methodology (deep learning, self-supervised and generative models) positions my work squarely in translational, multimodal cardiac AI.

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Keywords specifying your expertise:

Biomedical Image and Signal Processing, AI applied to health, multimodal cardiovascular data analysis.

Horizon Europe call identified :

HORIZON-HLTH-2027-03-TOOL-04: Virtual Human Twins (VHTs) for integrated clinical decision support in prevention and diagnosis

Do you have other partners for this topic (which partners/country)?

Profile of partner sought

Role :

- Technology development
- Research
- Training
- Dissemination
- Demontration
- Other :

Country/region :

Expertise required

I agree with the publication of this document and my contact data : YES/~~NO~~