

# **King's MedTech Accelerator 2025 Cohort**



**Powered by King's College London  
Delivered by the School of Biomedical Engineering & Imaging Sciences  
At the London Institute for Healthcare Engineering**

# Welcome to our 2025 Cohort

It is our great pleasure to welcome the King's MedTech Accelerator 2025 Cohort.

At the School of Biomedical Engineering & Imaging Sciences, our mission is to engineer better health. This accelerator, hosted by the London Institute for Healthcare Engineering (LIHE), is a key part of that mission, providing the tools, networks, and mentorship needed to guide MedTech entrepreneurs through the entire innovation journey from discovery to impact.

The King's MedTech Accelerator supports aspiring entrepreneurs working at the intersection of medical devices, digital health, and AI. Through expert-led workshops, strategic mentorship, and investor engagement, the programme empowers academic teams and early innovators to navigate the path from bench to bedside to boardroom.

This brochure introduces our second cohort - each of whom brings bold ideas and deep scientific insight. We are proud to support them on this journey and excited to see the ventures, partnerships, and societal impact that will emerge.

We thank our expert team at LIHE, our collaborators, mentors, and partners who help make this programme a success.



## **Professor Sebastien Ourselin FEng FMedSci**

*Assistant Principal (Innovation), King's College London  
Director, London Institute for Healthcare Engineering  
Head of School, School of Biomedical Engineering & Imaging Sciences*

# The Programme

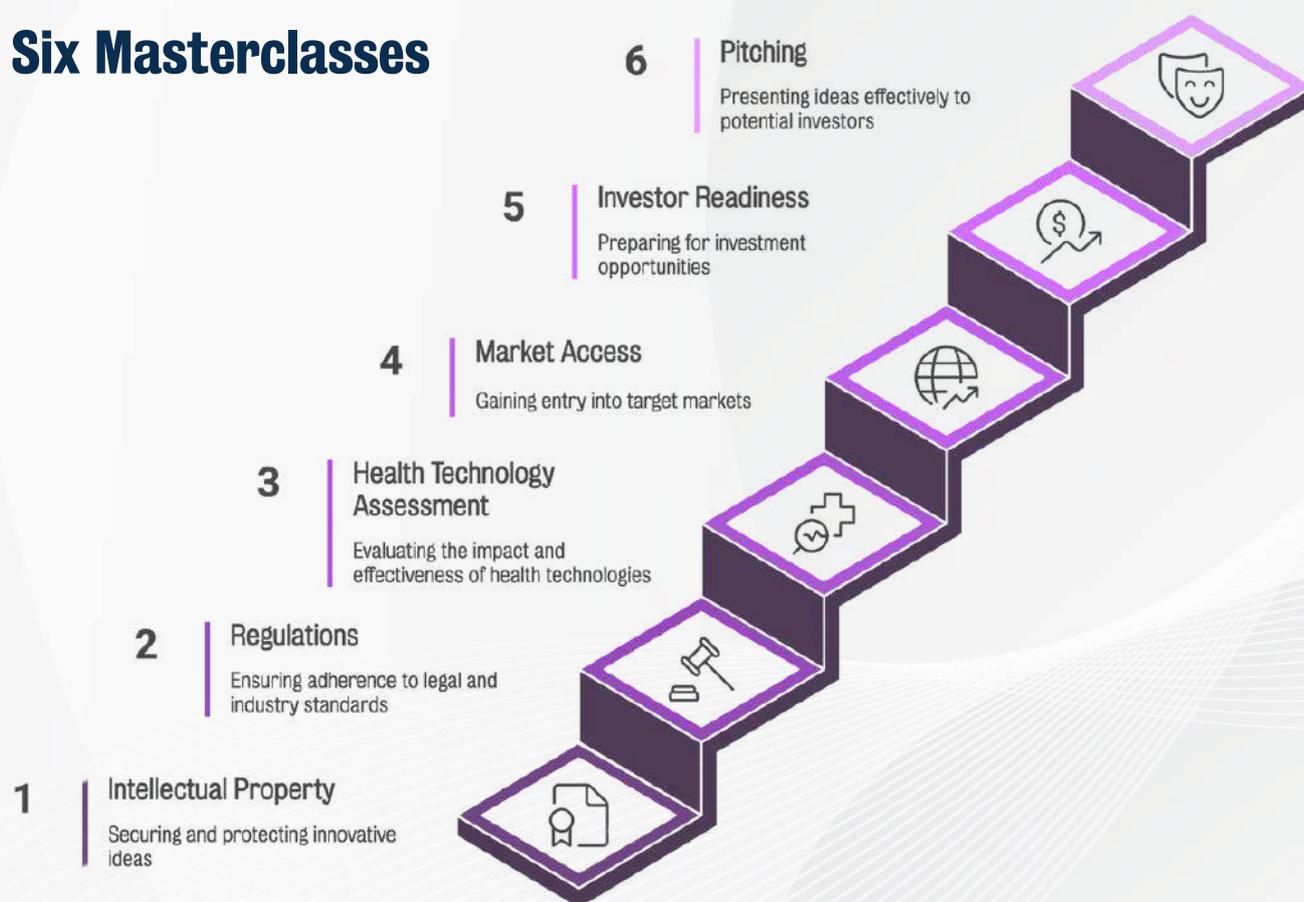
The King's MedTech Accelerator is a six-month, part-time programme held in person at the London Institute for Healthcare Engineering (LIHE). It supports early-stage healthcare innovation from across King's College London and King's Health Partners, helping teams explore routes to translation and commercialisation.

Open to researchers, clinicians, and professional staff, the programme welcomes projects at proof-of-concept stage or beyond, spanning digital health, AI, diagnostics, devices, and therapeutics.

Participants receive masterclasses on IP, regulation, health economics, market access, and investment; take part in monthly venture reviews with expert feedback; and access 1:1 support and a network of industry, NHS, and investor stakeholders. The programme concludes with a Showcase Day to present ventures to potential partners and funders.

Alumni have progressed to translational grants, licensing discussions, patent filings, and spin-out formation, with many remaining connected through the accelerator's growing network.

## Six Masterclasses

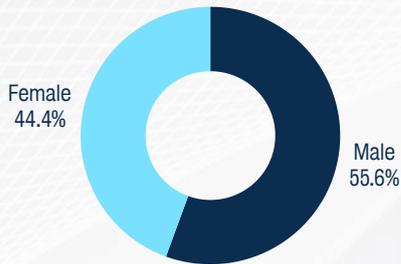


# King's MedTech Accelerator

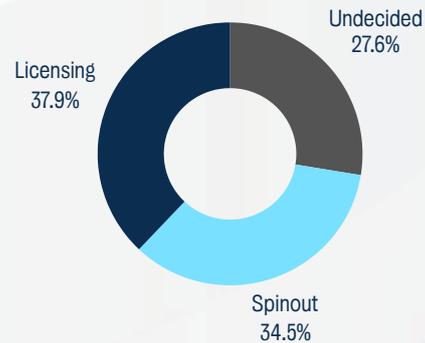
## 2025 Cohort at a Glance

70 Applications → 39 Interviews → 27 Final Cohort

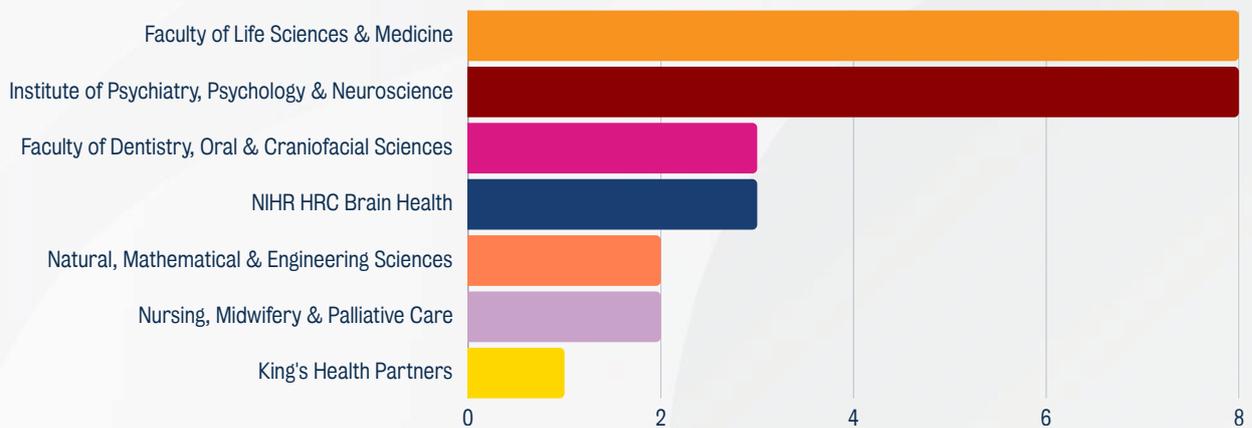
### 44% of Projects are Female-Led



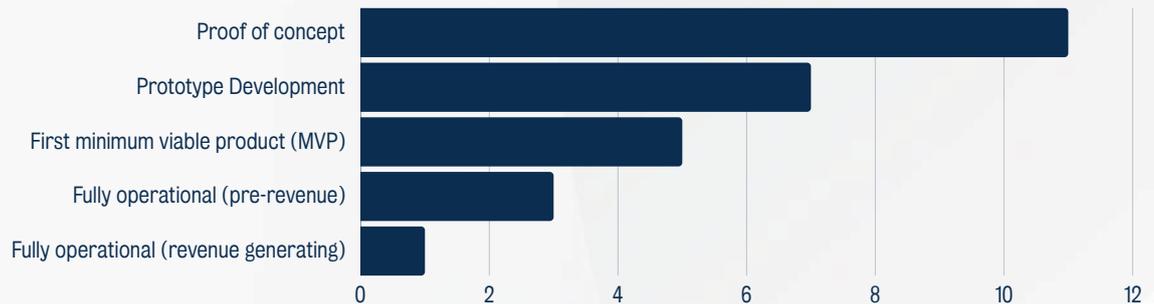
### Over a Third want to Spinout their Technology



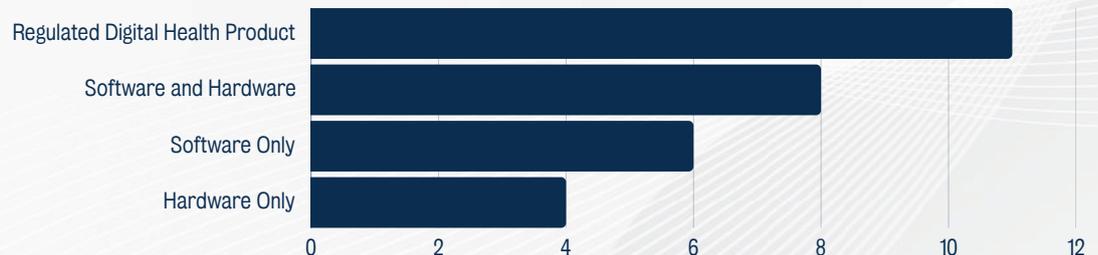
### The Cohort has Strong Representation Across King's and King's Health Partners



### Majority of the Cohort are at the Proof of Concept Stage



### Majority of Innovations have a Regulated Digital Health Component



# AIRMILD

**Project Lead: Marium Naqvi FoLSM**

Interstitial lung diseases (ILDs) are a group of lung conditions where inflammation and scarring lead to progressive breathlessness and impaired quality-of-life. Patients can experience acute exacerbations (AE), sudden worsening of their condition, which can impact disease progression and survival. Remote monitoring can support the timely detection of clinical deterioration but relies on clinician time and expertise.

We are using artificial intelligence enhanced remote monitoring (AIRM) to accurately detect clinical deterioration and predict AE in patients with ILD. This will lead to efficiencies in the healthcare system, including clinician time, so more time can be spent delivering bespoke patient care.

AIRM technology will improve access to specialist care for patients with ILD. It is exciting to use machine-learning for early detection of clinical deterioration and prediction of AE, which will support timely access to personalised treatments at home and shift care delivery to a proactive model.

## Marium Naqvi

Marium Naqvi is an interstitial lung disease (ILD) specialist pharmacist researching digital health technology in this specialty. She is a King's Health Partners Centre for Translational Medicine pre-doctoral clinical research excellence fellow exploring the use of artificial intelligence to enhance the remote monitoring of patients with ILD.



## Team Members

### Dr Richard E K Russell



# AURORA: Automated mUlti-paRametric repORting for fetal brAin MRI

**Project Lead: Dr Elena Uus** FoLSM



Fetal MRI provides valuable insights into brain development but remains limited to specialist centres due to challenges including fetal motion, poor image quality, long scan times, and lack of trained neuroradiologists. Current analysis methods rely on time-consuming, subjective 2D assessments, contributing to diagnostic uncertainty.

AURORA introduces a fully automated, AI-powered decision support tool that integrates 3D reconstruction, segmentation, biometry, and quality control into a real-time clinical workflow for fetal brain MRI.

This solution is designed for fetal medicine specialists and radiologists, enabling faster, more accurate, and standardised MRI reporting. By improving diagnostic confidence and accessibility, it has the potential to transform fetal MRI into a routine tool across more clinical centres. The system is being developed and validated using one of the world's largest fetal MRI datasets at King's College London, ensuring robustness and scalability.

**Dr Alena Uus**



- Research Associate at the Department of Early Life Imaging, KCL
- Co-founder of AURORA
- Computer scientist working on AI-guided image processing and analysis for fetal and neonatal MRI focused on clinical translation.



## Team Members

**Dr Aysha Luis**



**Dr Jacqueline Matthew**



**Dr Lisa Story**



# BounceBack

**Project Lead: Matthew Howard** NMES



**BounceBack**

Repetitive grip training is critical for hand strength, injury recovery, and neurological rehabilitation, but current tools lack engagement, feedback, and personalisation—leading to poor adherence and slow progress. Our innovation is the BounceBack ball, a smart, app-connected squeeze ball that tracks grip strength, frequency, and endurance in real time while delivering adaptive, gamified training programs.

Combining soft robotics, embedded sensors, and intuitive mobile integration, BounceBack transforms a simple exercise into a motivating, measurable experience. Designed for physiotherapy patients, stroke survivors, athletes, and wellness enthusiasts, it enables accessible, trackable hand training at home or in clinics. This solution is exciting because it bridges the gap between clinical effectiveness and everyday usability—making rehabilitation empowering, data-driven, and even fun.

**Matthew Howard**



- Lead applicant, Reader in Engineering at King's, CEO and co-founder of the venture.
- Internationally-recognised expertise in robotics, machine learning, control and mechatronic design.
- Published >60 top-tier publications, regular invitations to speak at international scientific meetings.
- Experienced manager of publicly- (EPSRC, RAEng, JSPS) and privately-funded (AHDB, Kobe Steel, Vitacress) research projects (from which the technology underpinning this application originated).
- Team leader and mentor of ECRs, 16 PGR students have graduated under his supervision.
- Engaging communicator: appearances in international media (BBC, Al Jazeera).
- Familiar with regulatory needs, holds seat on the BSI Standards Group for Robotics.



## Team Members

**Prof. Louise Rose**



# Cardiac Digital Twin Technology

**Project Lead: Dr Martin Bishop** FoLSM

Ventricular tachycardia is a potentially-lethal heart-rhythm disturbance affecting over 300,000 annually in the UK. Catheter ablation, although considered late in the disease course, is the only therapy with a high chance of long-term freedom from VT. However, identifying the optimal targets to ablate remains a significant clinical challenge, resulting in lengthy procedures, with high risk and low success rates.

We have developed a novel digital twin technology which utilizes patient imaging and electrical data to simulate the exact arrhythmia episode the patient is suffering from. Clinicians can then use these simulations to provide pre-procedural guidance for ablation targets, increasing procedure efficiency, reducing risk, and increasing the accuracy of target identification. We hope that our technology will benefit clinical practices and patients alike.

**Dr Martin Bishop**



My core focus is to develop and use advanced computational simulation technologies to directly improve the diagnosis and therapy planning of cardiac arrhythmias. By working with a close team of clinicians and advanced computational modellers, we use clinical imaging data, alongside electrophysiology recordings, for both computational model construction and validation.



# Cavitation-Based Dental Implant Cleaning

**Project Lead: Dr Claire McCarthy FoDOGS**

Peri-implantitis is a common and serious complication affecting up to 25% of dental implant patients, resulting in infection, bone destruction, and implant loss or removal. Current treatment relies on complex, costly surgery with poor outcomes and limited accessibility, leaving millions at risk.

We have developed a novel, non-surgical, non-contact implant cleaning system that combines an implant cleaning function, a cavitation-focused ultrasonic tip and a cavitation enhancing coolant. This technology harnesses the power of cavitation to remove bacterial biofilm from complex and inaccessible implant surfaces, especially hard-to-reach threads, without touching or damaging the implant.

Designed for routine use by dental professionals during maintenance visits, this system offers a safe, effective, and affordable alternative to surgery. It meets a critical, unmet need in dentistry with a preventive, ethical, and sustainable approach. For clinicians and patients alike, this innovation protects implant longevity, reduces treatment burden, and shifts the paradigm in managing peri-implant disease.

## Dr Claire McCarthy

Our lead for this project, Dr. Claire McCarthy, a dental hygienist, has 30 years' experience treating patients and teaching clinical dentistry. An aerosol reducing coolant for ultrasonic devices, developed during her PhD forms the key component of the implant cleaning system. Well known across academic and industry sectors, she brings strengths in research translation, dissemination, education, user feedback, implementation, and adoption.



## Team Members

**Professor Michael Fenlon**  

**Mr. Erinc Erkel** 

**Dr. Oscar Allan Furlong-Lopez** 



# DeepHeart

**Project Lead: Dr Oleg Aslanidi** FoLSM

Atrial fibrillation (AF) affects over 2.5% of the global population and increases the risk of stroke, yet current tools for diagnosis and treatment are often imprecise and rely on user experience. DeepHeart is an AI-powered, software-only app that uses digital twinning and multimodal clinical data, like ECG and imaging, to personalise care for AF, stroke, and heart attack risk. Unlike existing tools, our technology predicts the most effective catheter ablation strategy for each patient before the procedure and enables early, interpretable risk detection from standard clinical data. Designed for seamless clinical integration, it offers speed, accuracy, and scalability. Our solution is built for cardiologists, hospitals, and MedTech partners aiming to reduce recurrence, improve outcomes, and lower healthcare costs.

**Dr Oleg Aslanidi**



Prof. Oleg Aslanidi (Scientific Advisor), Course Director of Biomedical Engineering BEng/MEng at King's College London, is a leading expert in computational cardiology. His research combines biophysical modelling, AI, and imaging to advance digital twins for arrhythmia care, promoting scientific rigour and clinically relevant innovation in personalised cardiovascular treatment.



## Team Members

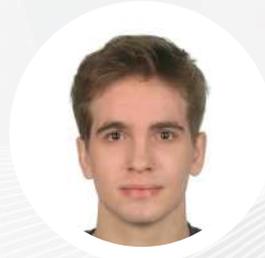
**George Obada**



**Shaheim Ogbomo-Harmitt**



**Jakub Grzelak**



**Riccardo Cavarra**



# Expandable radiofrequency lesion needles

**Project Lead: Dr Stephen Ward** **KHP**

One of our treatments for back pain is the ablation of articular nerves to the lumbar facet joints using radiofrequency energy delivered to a needle tip. The success of this procedure is dependent on the size of the heat lesion generated with larger bore needles resulting in larger lesions and improved outcomes. This then becomes a balance between patient comfort, tolerability and risk and success rate.

We have developed a system which includes a small gauge needle housing an expandable Nitinol electrode which emerges from the needle tip. As current passes along the electrode, the tip expands to 'mimic' a large bore needle tip. We have a US and International patent application in progress and have develop the device to prototype stage.

## **Dr Stephen Ward**

I have been a Consultant in Pain Medicine at St Thomas' Hospital for 7 years moving from the South Coast where I held a consultant post for 18 years. My clinical and academic interest is in spinal pain – I chaired the current NICE guideline on low back pain and am a member of the TwinsUK back pain research group. A colleague (Dr Thomas Yearwood) and I formed PainLab Ltd 6 years ago and we have developed a number of early stage medical devices with applications to pain management that we wish to progress on the programme. I enjoy statistical programming and 3D design.



# FiberVue Medical

Project Lead: **Jianrong Qiu** FoDOGS



FiberVue Medical addresses the critical challenge of accurate cancer detection during endoscopy, where clinicians struggle to distinguish dysplastic lesions from inflamed tissue and cannot determine cancer depth or margins without invasive biopsies that delay diagnosis. Our innovation integrates Raman spectroscopy for molecular analysis with optical coherence tomography for structural imaging into a single miniaturized fiber-optic probe, enabling real-time "optical biopsy" that can detect, grade, and stage mucosal cancers non-invasively during routine endoscopic procedures. This technology is designed for gastroenterologists and oncologists treating the 4.8 million patients diagnosed annually with GI cancers worldwide, offering a game-changing solution that could increase survival rates from 30% to 85% through earlier detection while eliminating biopsy delays, reducing patient discomfort, and enabling immediate clinical decisions—all within a growing \$27.46 billion market projected to reach \$93.48 billion by 2035.

**Jianrong Qiu**



Jianrong Received his MSc. in information engineering and Ph.D. in optical engineering from Zhejiang University. He is currently a Postdoctoral Research Associate at King's College London. His research interests include optical coherence tomography, advanced endoscopy and Raman spectroscopy.



**Shiyue Liu**



I have 8 years of experience in biophotonics and biomedical engineering, focusing on stem cell differentiation via multiphoton stimulation on microfluidic devices and developing AI-integrated multimodal imaging for tissue response analysis. I aim to advance biomedical techniques for early disease diagnosis and treatment through multidisciplinary innovation.



# Hand Tune

**Project Lead: Dr Crina Grosan NMES**



**Problem:** Hand deformities from conditions like Epidermolysis Bullosa and Dupuytren's Contracture require surgery and splinting to maintain function. However, current splints are static, uncomfortable, and unable to adapt to rapid post-surgical tissue changes—leading to poor patient compliance and suboptimal recovery.

**Innovation:** The proposed solution is an AI-powered, dynamic hand splint that uses real-time data from embedded sensors to automatically or manually adjust tension in response to structural changes in the hand. Machine learning algorithms analyze finger position, pressure, and tissue remodeling to maintain optimal support. The splint also incorporates customizable interfaces, smart materials, and predictive analytics to enhance precision and comfort.

**Audience & Impact:** Designed for both patients and clinicians, this technology enables more personalized, effective post-surgical care. It reduces the need for frequent clinic visits, improves adherence, and potentially delays or prevents contracture progression. This approach represents a significant leap forward in precision rehabilitation for complex hand conditions.

**Dr Crina Grosan**



Crina's current and future research explores the convergence of AI, digital biomarkers, and patient-reported outcomes to build scalable, person-centred interventions that respond to individual needs. Her interdisciplinary approach positions her as a leader in the creation of intelligent, clinically aligned AI systems for the next-generation of remote, personalised healthcare.



## Team Members

**Keith Jenkins**



**Fiona Sandford**



# HEART.FM

**Project Lead: Prof. Elaine Chew** FoLSM

HEART.*fm*

Music engagement is pervasive and pleasurable. It has profound effects on the body and the mind. Autonomic reactions to music like changes to heart rate and blood pressure can be harnessed to alleviate the global scourge of heart disease, the number one killer, and its foremost risk factor, hypertension. But why and how music works on cardiovascular variables remain mysterious and undissected, limiting its robust and systematic use in medical diagnostics and treatments. The ephemeral quality of music and the highly personalised nature of music reaction makes targeted use of music complex and challenging. Our approach leverages knowledge about music expressivity, the prosody of music communication. Linking expressive music features continuously to cardiovascular measures, we stratify physiological reactions to prosodic structures during music engagement. Autonomic tendencies precipitate cardiovascular disease, and heart disease impacts autonomic response. Our methods use music reaction characteristics for both diagnosis and for personalisation of music-based interventions.

**Prof. Elaine Chew**



Elaine CHEW, PI of the ERC project COSMOS, is Professor of Engineering jointly appointed between the Department of Engineering (NMES) and the School of Biomedical Engineering & Imaging Sciences (FoLSM) at King's College London. An operations researcher and pianist by training, Elaine Chew is a leading authority in music representation, music information research (MIR), and music perception and cognition, and an established performer. A pioneering researcher in MIR, she is forging new paths at the intersection of music and cardiovascular science. Her work has been recognised by the ERC, PECASE, NSF CAREER, and Harvard Radcliffe Institute for Advanced Study Fellowships. She is an alum (Fellow) of the NAS Kavli and NAE Frontiers of Science/Engineering Symposia. Elaine received PhD and SM degrees in Operations Research at MIT, a BAS in Mathematical & Computational Sciences (honours) and Music (distinction) at Stanford, and FTCL and LTCL diplomas in Piano Performance from Trinity College, London.



# HEART.FM

Project Lead: Prof. Elaine Chew **FoLSM**

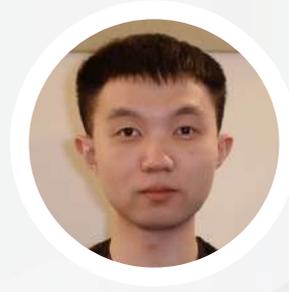
# HEART.*fm*

## Team Members

Natalia Cotic



Wentao Hao



Prof. Pier Lambiase



Poulomi Pal



Vanessa Pope



Mateusz Solinski



# Heart failure diagnosis with AI-assisted point-of-care echocardiography

**Project Lead: Dr Haotian Gu** FoLSM

We aim to develop an AI-assisted point-of-care echocardiography service to enable faster, more accurate, and accessible diagnosis of heart failure (HF) in primary care settings. HF is the most common endpoint of cardiovascular disease, affecting over 10% of people aged 70 and above in the UK. It is a major contributor to the £9 billion annual cost of heart and circulatory conditions.

Current challenges include long wait times for echocardiography due to a shortage of trained specialists and limited tools for early detection.

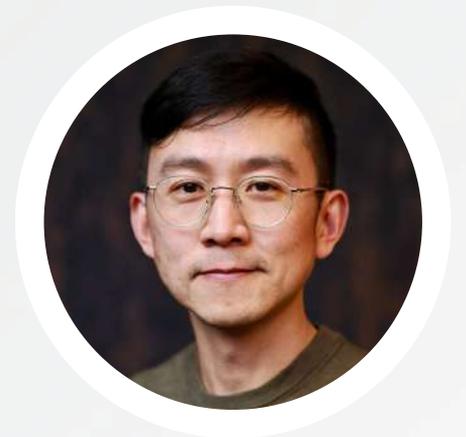
To address this, we propose:

1. A 3-month, AI-assisted training programme accredited by the British Society of Echocardiography for non-specialists, such as GPs and nurses, enabling them to acquire and interpret echocardiographic images using AI-guided handheld devices.
2. Early diagnosis of HF using a novel metric—First Phase Ejection Fraction (EF1)—which can be automatically derived and interpreted using AI-assisted point-of-care echocardiography.

**Dr Haotian Gu**



Dr Haotian Gu is a Clinical Senior Lecturer at KCL, Honorary Consultant Clinical Scientist in Cardiac Imaging. Clinical academic with special interest in developing novel imaging biomarkers and translational research. He has also been awarded the prestigious NIHR Advanced Clinical and Practitioner Academic Fellowship (ACAF)



## Team Members

**Dr Kathrine Warren**

**Miss Ernestene Vasa**

**Miss Rahaf Alshehri & Miss Yujia Yang**

# Human Robotix

Project Lead: Dr Ildar Farkhatdinov **FoLSM**



Human Robotix Ltd specialises in the development of customisable robotic and mechatronic solutions designed to support researchers and clinicians in the study of human sensorimotor system. The company's flagship product, the HRX-1 modular robotic platform, offers a cost-effective solution for conducting research on neuromotor control and movement of the human hand and arm. This project aims to investigate the potential applications of the HRX-1 system in stroke assessment and to establish a strategic roadmap for its certification as a medical device.

The robotic solutions developed by Human Robotix Ltd are based on a modular design approach, making them highly reconfigurable and adaptable to a wide range of applications. Their modularity, combined with a compact form factor, enables high portability and facilitates rapid and straightforward deployment in clinical environments. To date, our primary end-users have been academics and clinicians engaged in research on human neuromotor control. We are pleased to participate in the Medical Technology Accelerator Programme, which presents a valuable opportunity to introduce our technology to key stakeholders in the medical and venture sectors.

**Dr Ildar Farkhatdinov**  

Ildar Farkhatdinov (PhD) is a Senior Lecturer in Medical Robotics at King's College London and a co-founder of Human Robotix – a start-up developing customisable modular robotic solutions for fundamental and clinical research of human sensorimotor system. Ildar's research expertise is in assistive and rehabilitation robotics, haptics and physical human-robot interaction.



## Team Members

**Joshua Brown** 



# HUMAN ROBOTIX

# MDM-AI

**Project Lead: Dr Christopher Banerji** FoLSM

MDM-AI



Cancer diagnostic and treatment targets in the NHS have not been met for over a decade, and the gap between demand and delivery continues to widen. A key bottleneck is the Multidisciplinary Team Meeting (MDM), where complex decisions about cancer care are made. These meetings are vital but resource-intensive, often contributing to delays, clinician burnout, and inconsistent patient outcomes.

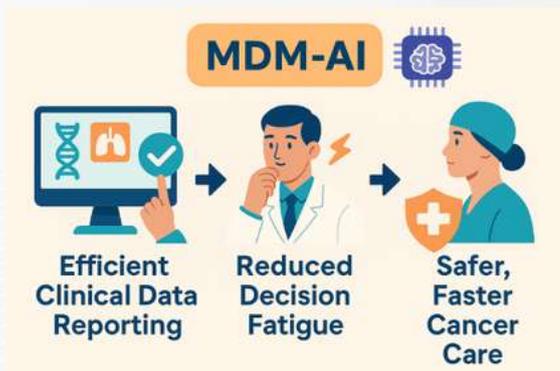
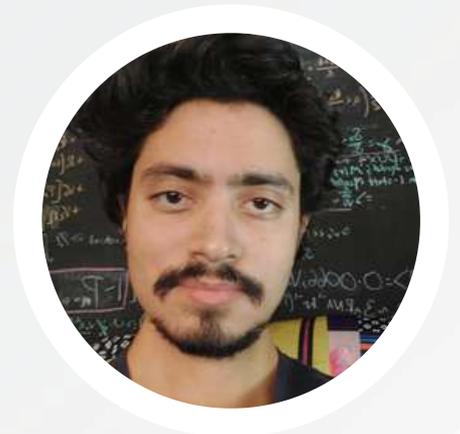
MDM-AI is an AI-powered platform that supports the entire MDM workflow, from data preparation to transparent decision support. Co-developed with clinicians and patients, the system integrates seamlessly into real-world clinical pathways while maintaining the highest standards of safety, fairness, usability, and oversight.

Designed for NHS Trusts, clinicians, and cancer centres, MDM-AI enables safer, faster, and more consistent care. It enhances clinical decision-making, improves service planning, and helps reduce system-wide delays and costs. By streamlining cancer pathways without compromising quality, MDM-AI will help to deliver better outcomes for all cancer patient.

**Dr Christopher Banerji**



Dr Christopher Banerji is a clinician-scientist and AI researcher at King's College London and the Alan Turing Institute. A trained mathematician and histopathologist, his research develops trustworthy clinical AI systems for NHS deployment, combining technical innovation with patient involvement, regulatory alignment, and real-world healthcare integration.



# MemReD

**Project Lead: Prof Roland Zahn IoPPN**

Research has shown that emotional biases in our memory and depressive mood states are tightly linked. This has led to the development of our novel blended digital therapeutic: memory reshaping for depression (MemReD), a training programme which consists of two components:

- 1) Memory flexibility (MemFlex)
- 2) Blame Rebalancing.

Both components highlight the ways in which memory can become unhelpful and provides guided practice with more flexible and effective ways of thinking about your personal past to correct these unhelpful memory habits.

The development of MemReD at King's College London was funded by the UK Medical Research Council and led by Professor Roland Zahn, Professor of Mood Disorders & Consultant Psychiatrist at the Maudsley National Service for Affective Disorders. It was developed in collaboration with the University of Melbourne (Dr Caitlin Hitchcock), the University of Cambridge (Professor Tim Dalgleish), and the D'Or Institute for Research and Education in Rio de Janeiro (Dr Jorge Moll).

MemFlex was developed by Dr Caitlin Hitchcock, Clinical Psychologist at the University of Melbourne, together with Professor Tim Dalgleish, Professor at the University of Cambridge and Clinical Psychologist and Director of the Cambridge Clinical Research Centre in Affective Disorders. MemReD has been fully developed and co-designed with our lived-experience user group.

## Team Members

**Daniel Kiss**

**Rose Chaykin**



**Nima Nariman**

**Halle Lawson**



# MENDEA



**Project Lead: Alastair Monty** **IoPPN**

Current treatments for psychiatric and neurological disorders are often ineffective. Many patients cycle through medications with significant side effects, or remain treatment resistant. At the same time, brain stimulation technologies such as deep brain stimulation (DBS) or transcranial magnetic stimulation (TMS) are either invasive, imprecise, or inconsistent in outcome. There is a major unmet need for non-invasive, targeted, and adjustable brain stimulation therapy that can be scaled clinically and commercially.

We are developing a non-invasive brain stimulation device that uses focused ultrasound to modulate brain circuits driving common disorders including OCD, depression, and anxiety. Our technology replicates the clinical effect of deep brain stimulation, without the need for surgically implanted electrodes.

Our initial focus is OCD, which affects 3% of the global population including 750,000 people in the UK. We will give treatment-resistant patients an effective therapy with minimal side effects, and without the need for surgery or medication.

## Alastair Monty

Before co-founding Mendea, Alastair was a private equity M&A lawyer in the City of London and a corporate legal consultant. His clients included health-tech startups, multinational corporations, and high net worth individuals. Alastair has advised on complex cross-border transactions, licencing for IP and commercial software, contract negotiation, and data privacy.



## Team Members

### Dr Stephen Hicks



# MSpredictor<sup>©</sup>

**Project Lead: Dr Tasanee Braithwaite** FoLSM

Inflammation in the eyes can serve as a 'canary in the coalmine' for future risk of developing multiple sclerosis (MS) and other heritable autoimmune diseases. MSpredictor<sup>©</sup> is a software application, arising from proof-of-concept work in the UK Biobank and validated in two external biobanks (Geisinger, USA, and FinnGen, Finland) (Nature Communications 2024). This tool will offer patients and clinicians an estimation of individual future risk of developing MS, through combining genetic and other risk factor information. This tool will be for people affected by optic neuritis, a condition in which swelling of the wiring connecting the eye and brain threatens sight. Early assessment of the risk of developing multiple sclerosis could inform clinical management and ultimately improve health and vision outcomes.

## Dr Tasanee Braithwaite

Dr Tas Braithwaite is a leading innovator in ophthalmology, specialising in the integration of genomics, big data, and patient-centred tools to advance precision medicine in immune-mediated diseases. She is a Consultant Ophthalmologist (St Thomas' Hospital), Senior Lecturer (KCL), and Fellow in the King's Health Partners Centre for Translational Medicine.



## Team Members

**Pavel Loginovic** 



**Prof. Richard Oram** 



# My-HT

Project Lead: Dr Lyndsay Hughes **IoPPN**



After completing primary cancer treatment, women with oestrogen-receptor positive breast cancer have to take a daily hormone therapy tablet. Around half of women don't take the hormone therapy as directed which puts them at greater risk of cancer returning and increasing healthcare costs.

We developed myHT, the first evidence-based app proven to boost long-term adherence to hormone therapy. Built on a decade of research and designed with patients, it uses psychological techniques to support women in managing their medication, symptoms, and side effects.

In trials, myHT users were nearly three times more likely to take their medication, with high satisfaction and retention rates. With no NICE guidelines or scalable solutions currently available, myHT fills a critical gap. It's not only helping women stay on life-saving treatment, it could transform care for other long-term conditions too.

**Dr Lyndsay Hughes**



Lyndsay Hughes, a Reader in Health Psychology at King's College London, has 15 years of experience researching treatment adherence. Her work focuses on managing long-term physical conditions and developing evidence-based interventions to support medication adherence. Lyndsay led the e-PATH study, testing a self-directed app for breast cancer survivors.



# Neurometry

## Project Lead: Omair Ahmed NIHR HRC Brain Health



NEUROMETRY

Neurometry addresses the limitations of traditional cognitive assessments—especially in acute stroke, complex recovery, and broader cognitive disorders. Existing tools are language-based, episodic, based on paper and pen, and poorly suited for remote or continuous care.

Our innovation is a non-verbal, mobile-first platform of clinically validated cognitive games that assess and train memory, attention, executive function, and fine motor coordination. Supported by clinical trials in subjective MCI and preclinical data in Huntington's, Parkinson's, and stroke, the platform transforms brain monitoring into an engaging, repeatable experience.

We're in pilot discussions with Southampton NHS Trust and expanding a direct-to-consumer user base, enabling patients, families, and clinicians to track cognitive health from home. Neurometry also integrates external research tools—like those from University of Bern Psychiatry Hospital—and is developing next-gen features such as eye tracking and emotional recognition deployable in consumer-grade devices.

It's exciting because it redefines cognitive care with continuous digital biomarkers, broad accessibility, and future-ready neurotechnology that supports both clinical and real-world use.

### Omair Ahmed



Omair Ahmed is the founder of Neurometry, a clinically validated platform using game-based tools for cognitive assessment and neurorehabilitation. With a background in finance and biotech, he partners with institutions like the NHS and University of Bern to advance accessible, non-verbal digital health solutions for neurological and cognitive disorders.



## Team Members

### Rhiannon Wickendson



### Egor Levchenko



# Next generation upper limb prosthetic technology



**Project Lead: Dr Nicola Bailey NMES**

Upper-limb prosthetics are a continually developing category of assistive technology. However, abandonment rates remain high (up to ~40-50%), due to users' needs and expectations not being met, with key factors including comfort and weight. Additionally, up to 50% of prosthesis users say they would only use their devices when necessary.

Our approach aims to provide a step change in upper limb prosthetic devices, through addressing current users' issues. By taking a user-centred approach to developing technology, which puts the users at the centre of the design process, novel innovations have been produced to fill a gap in the market of accessible and affordable technology.

The technology will impact anyone who has an upper-limb difference and is looking for affordable prostheses/devices that are accessible. The excitement around the technology is that it is breaking the mould of traditional devices, and remove barriers that some users currently experience.

**Dr Nicola Bailey**



Nicola has been researching upper limb prosthetics for the past 5 years. She places prosthetic users at the centre of her research, with the development of new technology and approaches being based on their needs and expectations. This ensures acceptance by the community and a step change in user's experience.



## Team Members

**Nicos Hadjigeorgiou**



# OPORA Health Technologies

**Project Lead: Svitlana Surodina NIHR HRC Brain Health**

AI offers transformative potential in healthcare, yet most implementations fail to scale due to stringent compliance demands and limited access to diverse, high-quality datasets. Privacy regulations, bias mitigation requirements, and the need for seamless integration into complex health systems create significant barriers to innovation and clinical uptake.

OPORA Health addresses these challenges with a platform purpose-built for ethical, AI-ready data collection. It integrates patient-facing mobile apps, automated validation, privacy tools, and a semantic compliance engine. The platform supports clinical, self-reported, and sensor data, while addressing cultural, regulatory, and ethical concerns.

Built for clinical innovators, the OPORA platform ensures data quality, traceability, and representativeness as well as high speed and low costs of deployment. Its flexible workflows improve inclusion of underserved groups. By enabling compliant, inclusive data practices and fostering cross-organisational data collaborations in brain health, OPORA accelerates impact and opens access to a rapidly growing health AI market.

## Svitlana Surodina

Svitlana Surodina, Co-founder and CEO of OPORA Health. Serial entrepreneur with 20+ years in tech. Expert in building all-star teams and developing digital solutions that improve lives. Oxford MBA and a current PhD in Computer Science at King's College.



## Team Members

**Daria Volkova** 



**Egor Gotov** 



**Iryna Nadtochii** 



# REFUEL MS

**Project Lead: Dr Sophie Fawson** **IoPPN**



Although up to 90% of people living with multiple sclerosis (MS) experience fatigue, it is severely undertreated. This has a huge impact on patients' quality of life and ability to work, increasing societal costs and healthcare service strain. Patients report limited access to behavioural and exercise treatments, which have been demonstrated to be more effective than medication. Our innovation is REFUEL-MS: a digital healthcare professional supported therapeutic co-designed with people with MS and clinicians. It delivers personalised, evidence-based support via engaging content; offering tailored tools to manage and reduce the impact of fatigue via cognitive behavioural principles, physical activity, and balance exercises. It also supports clinicians by improving treatment accessibility and consistency. With potential to expand to other fatigue-related conditions, REFUEL-MS offers an exciting, scalable solution with direct patient and system benefits.

## Dr Sophie Fawson

Dr Sophie Fawson is a post-doctoral researcher specialising in digital health intervention development, clinical research and regulatory compliance. She has experience collaborating with multidisciplinary teams and is currently leading the application for and conduct of a clinical investigation of a medical device under an MHRA notice of no objection.



## Team Members

### Dr Madison Milne-Ives



# SOFT META-EXOS

## Project Lead: Dr Emmanouil Spyrakos NMES

Stroke, as the second leading cause of death and third leading cause of death and disability globally, has become a major healthcare challenge. In the UK, there are 100,000 stroke casualties every year and 1.3 million stroke survivors, whose treatment incurs £1.6Bn worth of NHS spending, and an aggregate cost of £25.6Bn, annually; global costs exceed £566Bn. Efficient stroke rehabilitation necessitates 45-minute sessions, five times a week, although this standard is never met due to a shortage of healthcare services. Improved mobility can be achieved via rehabilitation-exercise-induced neuroplasticity. However, stroke survivors face mobility challenges when travelling to/from rehabilitation centres, with over 600,000 of them living outside of a 20km radius from a stroke-support group.

Our solution to this pressing problem is a real-time reconfigurable, articulated-soft, lower-limb exoskeleton for residential settings. Our reconfigurable (metamorphic) exoskeletons can be adapted to distinct patient anatomies, switch between dynamic and static rehabilitation, and enable perfect matching with any patient's biological ankle complex.

This solution can have a transformative effect on the lives of the 1.2 million stroke survivors in the UK, and the 80 million stroke survivors around the world.

## Dr Emmanouil Spyrakos

Emmanouil is currently a Senior Lecturer (Associate Professor) in Robotics at KCL. His research interests include articulated-soft robots, bipedal robots, and physical human-robot interaction. He was a recipient of the 2022 JMR Best Paper Award, a Best Interactive Paper Award finalist at Humanoids 2015, and PI of EPSRC REST: Reconfigurable Lower Limb Exoskeleton for Effective Stroke Treatment in Residential Settings.



## Team Members

Prof. Jian Dai 

Dr Kun Wang



# SloMo

**Project Lead: Dr Amy Hardy IoPPN**



Worries about harm from others (also known as paranoia) are common in the general population, and a key symptom of Schizophrenia-spectrum disorders. Thinking fast or going on gut feelings is natural but can fuel these worries. For some, fast thinking and worries start to get in the way of life. Cognitive behaviour therapy for psychosis (CBTp) is the recommended talking therapy. However, only a minority of people can access CBTp due to limited resources, and even when available, therapy can be difficult to do and use in daily life.

SloMo is a digitally supported therapy that aims to overcome these barriers. It was developed using evidence-based co-design. SloMo supports people to notice their fast-thinking habits and slow down to find ways of feeling safer and living well. During therapy sessions, people learn to slow down using SloMo tips. Between therapy sessions, a mobile app supports learning and practice.

**Dr Amy Hardy**



Amy is a Senior Lecturer in Clinical Psychology at King's College London and Consultant Clinical Psychologist at South London & Maudsley NHS Foundation Trust. Amy is co-founder of SloMo and leads the Wellcome funded SloMo2 study, evaluating the therapy's implementation in NHS routine care.



## Team Members

**Katie Taylor-Ryan**



**Tom Gant**



# STOP: Successful Treatment Of Paranoia

Project Lead: Prof Jenny Yiend **IoPPN**



Paranoia—persistent fears that others intend harm—affects millions globally, yet effective, accessible treatment remains out of reach for most. Traditional therapies like CBT have limited scalability, long wait times, and only modest outcomes. STOP addresses this gap with an innovative, therapist-free mobile app that delivers Cognitive Bias Modification for Interpretation (CBM-I) tailored specifically for paranoia. As a standalone digital therapeutic, STOP offers discreet, immediate, and evidence-based support that can be accessed at scale. This is especially crucial for individuals on long waiting lists or those who continue to experience symptoms after therapy. Our initial focus is adults in UK secondary care, where uptake of recommended therapies remains low despite clear clinical need. What makes STOP exciting is its potential to democratize mental health support—reducing cost, widening access, and improving outcomes for underserved populations—while also integrating smoothly into NHS systems. Its design enables real-world reach without compromising clinical integrity or user experience.

**Jenny Yiend**



Jenny Yiend is Professor of Cognitive Psychopathology at King's College London and Chief Investigator of the STOP trial. Her research explores how cognitive processes, especially biases in thinking, contribute to mental health conditions like psychosis, anxiety, and depression. She leads development of digital interventions targeting cognitive mechanisms in clinical populations.



## Team Members

**Carolina Fialho**



**Nayan Kalnad**



**Rayan Taher**



**Vanessa Pinfold**

**Alex Kenny**



# Voice Spectrum AI

**Project Lead: Dr Nicholas Cummins** **IoPPN**

Speech-based assessments, such as picture descriptions, verbal fluency tests, and reading passages, are widely used in neurology, psychiatry, neurodevelopmental psychology, and clinical practice to evaluate cognitive, motor, and affective functions. In these settings, clinicians manually score and interpret the results by analysing verbal responses against detailed rubrics that assess content accuracy, coherence, and linguistic complexity. However, this process is resource-intensive and requires considerable expertise, making it challenging to scale for large cohorts or routine clinical use. Integrating AI-driven automatic speech recognition (ASR) and large language models (LLMs) presents a transformative solution to this challenge. By automating transcription and reporting, this combination has the potential to enhance scalability and efficiency. Combined with insights from speech biomarkers, such an approach could enable the rapid and objective analysis of speech data, offering standardised, norm-referenced reports that provide valuable insights into task performance at scale, without the need for manual annotations.

**Dr Nicholas Cummins**



Dr Nicholas (Nick) Cummins is a Lecturer in AI for speech analysis for health at King's College London, where he leads the Voice and Speech Processing for Health group. Nick's research aims to harness the transformative potential of speech technologies, creating reliable tools that drive innovation in health research and clinical applications.



## Team Members

**Dr Judith Dineley**



**Zoë Firth**



**Dr Charlotte Tye**



**Dr Johnny Downs**



# VR-Tool for Cocaine Dependence

Project Lead: Paolo Deluca **IoPPN**

Relapse after treatment is a major challenge for people recovering from cocaine dependence, often driven by intense cravings triggered by environmental cues. Existing therapies have limited success in managing these cravings, leading to poor engagement and high relapse rates. Our research introduces a novel, technology-enhanced approach to cue exposure treatment (CET), using virtual reality to create realistic, personalised environments that help individuals safely confront and reduce their triggers. In addition, wearable devices will monitor real-time physical responses in daily life to identify when and where cravings occur, enabling timely, tailored support. This study is designed for people seeking to overcome cocaine addiction and aims to offer a more engaging, responsive, and effective treatment option. It's exciting because it combines cutting-edge technology with psychological therapy to address a long-standing gap in addiction care, with direct input from people with lived experience to ensure it meets real-world needs.

## Prof. Paolo Deluca

Paolo Deluca is Professor of Addiction Research with 25+ years' experience. His work spans cognitive psychology, eHealth, and substance misuse. He leads major UK and EU-funded projects on addiction and mental health, with expertise in clinical trials, intervention development, and digital prevention tools.



# Xylem Robotics

**Project Lead: Ethan Nott** **IoPPN**

Xylem Robotics lets clinicians perform complex GI surgery at the tip of an endoscope - removing the need for external incisions.

Conventional GI operations rely on multiple laparoscopic ports, raising complication risk and recovery time. Purely endoscopic methods exist, but mastering them often takes hundreds of cases, slowing adoption.

Xylem's robotic instruments provide arm-like articulation and tactile feel at the endoscope tip, combining the dexterity of open surgery with the gentleness of endoscopy.

Our platform transforms endoscopy into a more intuitive and scalable surgical tool—the result is a shorter learning curve for physicians and incision-free care for patients.

**Ethan Nott**



Ethan founded Xylem Robotics after four years as a technical consultant at TTP, a UK-based technology consultancy, where he led the development of two surgical robots. He holds an MEng in Robotics from the University of Cambridge and is completing a PhD in Low-Field MRI Physics at King's College London.



