

## **Full project description for RS659**

The EOCARE-5F initiative aims to transform older adult care by developing innovative, low-maintenance wearable devices optimised for 5G connectivity. To overcome the impracticalities of expecting older adults to carry mobile devices continuously, the project focuses on creating user-friendly wearables that can be "fit-and-forget." These devices are to function without daily charging and minimal user interaction, leveraging cutting-edge 5G infrastructure to provide real-time data on essential health metrics like gait analysis and fall detection. The potential to directly transmit this data to healthcare providers can enable immediate interventions, enhancing the safety and well-being of older adults.

Research Question:

How can we design and implement 5G-enabled wearable technology to support continuous health monitoring and improve the well-being of older adults?

Objectives:

1. Collaboratively design the wearable technology with input from older adults to ensure usability and acceptance.
2. Engineer wearables that integrate seamlessly with 5G networks, emphasizing sustainability and low user burden.
3. Rigorously test the technology in real-world settings to validate its effectiveness and user engagement.

Expected Outcome and Impact:

EOCARE-5F aims to deliver a scalable, user-friendly solution that supports the independence of older adults while reducing the burden on NHS resources. The project aims to enhance the quality of life for this demographic by improving health outcomes and ensuring safety through proactive data monitoring and immediate healthcare responses.

Interdisciplinary Approach:

This PhD studentship is distinctively interdisciplinary, integrating MedTech, data science, and intelligent systems to tackle gerontological health challenges. The project bridges several academic domains—Medicine, Health and Life Science, Engineering, and Computer Science—creating a rich environment for innovation and high-quality research output. This collaborative approach not only fosters a deep understanding of the technology but also ensures the creation of technically feasible and socially beneficial solutions.

### Supervisors:

- Dr Gary Christopher: Expert in the psychology of ageing, focusing on integrating technology in therapeutic contexts to enhance older adults' mental health and well-being.
- Ian Walker: Expert in environmental psychology and user-centric design, providing invaluable insights into the ergonomic and psychological aspects of wearable technology.

### Facilities:

The project will utilise state-of-the-art laboratories with the latest 5G technology and wearable device development tools. The student will have access to advanced testing and fabrication facilities, which is part of the University's strategic initiative to lead innovations in digital healthcare technology.

### Career Readiness and Market Competitiveness:

The student involved in this project will emerge highly skilled in the rapidly expanding field of digital health technologies for older adults or gerontechnology. The interdisciplinary training will prepare them to lead future developments in healthcare technology, addressing critical issues in ageing populations and improving systemic healthcare delivery.

By focusing on practical, user-centric solutions and engaging with leading industry partners like Vodafone, EOCARE-5F positions itself at the forefront of technological advancements in healthcare. This project is not just about developing new devices but about shaping the future of older adult care through innovative technology and interdisciplinary collaboration.