UNIVERSITY of GREENWICH

## Information on Postgraduate Research Scholarship - Ref: Eng-PhD-19-25

| | | | |
|---|---|---|---|
| **Faculty:** | Engineering and Science | **Department:** | School of Engineering |
| **Lead Supervisor:** | Associate Prof. Chi Hieu Le | | |
| **Project Title:** | **A Novel Framework Integrating Digital Twins and AI for Human-Centric Robotic Rehabilitation** | | |
| **Project Description: (maximum 500 words)** | This doctoral research investigates how Digital Twins (DTs) and AI-driven technologies can revolutionise medical rehabilitation. The primary aim is to develop and validate a novel, DT-enabled and AI-assisted framework designed to transform robotic rehabilitation into highly personalised, adaptive, and genuinely human-centric therapies. Central to this study is a smart, AI-driven platform that continuously synchronises with real-time data to accurately reflect the physical, physiological, cognitive, and emotional states of patients.<br>By integrating DTs with emerging technologies, including AI/ML/DL, big data analytics, IoT, smart sensors, wearable technologies, and Extended Reality (XR: AR, VR, MR), this research creates a sophisticated ecosystem for dynamic monitoring and control of robotic devices. A comprehensive conceptual framework will be established and validated through real-world case studies to bridge the gap between advanced engineering and clinical application.<br>The findings will contribute significantly to the field of human-centric robotic rehabilitation, enhancing treatment efficacy and patient quality of life. This research aligns with global trends in personalised medicine, telehealth, and in-home healthcare, embodying the core Industry 5.0 principles of sustainability and human-centricity. Furthermore, the study facilitates real-time knowledge sharing and XR-driven visualisation for clinicians and patients, ensuring transparent, data-driven, and effective clinical decision-making.<br><br>This scholarship is awarded competitively, and all applications are carefully reviewed. While we cannot guarantee an offer, we encourage strong candidates to apply. | | |
| **Duration:** | 3 years, Full-Time Study or 6 years, Part-Time Study | | |

**Support available (subject to satisfactory performance):**

A successful Home candidate will receive:

- A Full tuition fee waiver at the university Home-student rate for the specified duration of the scholarship

A successful International candidate will receive:

- A tuition fee waiver for 50% of the International-student rate for the specified duration of the scholarship.

Tuition fees are subject to annual increases.

| | |
|---|---|
| This scholarship does not include funding for living expenses. | |
| **Person Specification of Essential (E) or Desirable (D) requirements:** | |
| **Criteria:** | **E or D** |
| ***Education and Training:*** | |
| • 1st Class or 2nd class, First Division (Upper Second Class) honours degree or a taught master's degree with a minimum average of 60% in all areas of assessment (UK or UK equivalent) in a relevant area to the proposed research project | **E** |
| • For those whose first language is not English and/or if from a country where English is not the majority spoken language (as recognised by the UKBA), a language proficiency score of at least IELTS 6.5 (in all elements of the test) or an equivalent UK VISA and Immigration secure English Language Test is required, if your programme falls within the faculty of Engineering and Science a language proficiency score of at least IELTS 6.5 overall with a minimum of 6.0 in all elements of the test or an equivalent UK VISA and Immigration secure English Language Test is required. Unless the degree above was taught in English **and** obtained in a majority English speaking country, e.g. UK, USA, Australia, New Zealand, etc, as recognised by the UKBA. | **E** |
| ***Experience & Skills:*** | |
| • Previous experience of undertaking research (e.g. undergraduate or taught master's dissertation) | **E** |
| • Strong Engineering and Computer Science Foundation: Solid background in robotics, mechatronics, biomedical engineering, or computer science with expertise in control systems, real-time systems, and programming (Python, MATLAB). | **E** |
| • AI/Machine Learning Expertise: Demonstrated hands-on experience with AI/ML/DL frameworks (TensorFlow, PyTorch), intelligent algorithms, and data-driven modeling approaches for adaptive and predictive systems. | **E** |
| • Digital Twin & IoT Knowledge: Understanding of digital twin architectures, simulation platforms, IoT ecosystems, sensor integration, and cloud computing for real-time monitoring and virtual modeling. | **E** |
| • Rehabilitation & Healthcare Understanding: Basic knowledge of medical rehabilitation principles, patient care workflows, human biomechanics, and awareness of clinical validation protocols and patient safety considerations. | **D** |
| • Big Data Analytics & Signal Processing: Experience with data processing pipelines, real-time data streaming, biosignal analysis, and handling large-scale healthcare datasets for decision-making. | **D** |
| • Extended Reality (XR) Technologies: Exposure to AR/VR/MR development tools and visualisation platforms for training, patient engagement, and immersive rehabilitation applications. | **D** |

| | |
|---|---|
| • Human-Centric Design Experience: Familiarity with user-centered design methodologies, ethical considerations in healthcare technology, and commitment to developing genuinely patient-focused solutions. | **D** |
| ***Personal Attributes:*** | |
| • Understands the fundamental differences between a taught degree and a research degree in terms of approach and personal discipline/motivation | **E** |
| • Able to, under guidance, complete independent work successfully | **E** |
| ***Other Requirements:*** | |
| • This scholarship may require Academic Technology Approval Scheme approval for the successful candidate if from outside of the EU/EEA | **E** |
| • The scholarship must commence before 15th July 2026 (offers will be withdrawn if this condition is not met) | **E** |
| **Closing date for applications:** | ***midnight UTC on 20th February 2026*** |
| **For further information contact:** | **Associate Professor Chi Hieu Le**<br>**Email: C.H.Le@gre.ac.uk** |

**Making an application:**

Please read this information before making an application. Information on the application process is available at: https://www.gre.ac.uk/research/study/apply/application-process. Applications need to be made online via this link. **No other form of application will be considered**.

All applications **must include** the following information. **Applications not containing these documents will not be considered.**

- **Scholarship Reference Number (*insert reference*)**– included in the personal statement section together with your personal statement as to why you are applying
- **a CV including 2 referees** *
- **academic qualification certificates/transcripts and IELTs/English Language certificate if you are an international applicant or if English is not your first language or you are from a country where English is not the majority spoken language as defined by the UK Border Agency** *

**upload to the qualification section of the application form. Attachments must be a PDF format.*

Before submitting your application, you are encouraged to liaise with the Lead Supervisor on the details above.