Information on Postgraduate Research Scholarship
Ref: FS-ES-04-2027-5

Faculty:	Engineering and Science	**School:**	Engineering
Lead Supervisor:	Dr Soumya Prakash Rana School of Engineering, University of Greenwich Email: S.Rana@greenwich.ac.uk		
Project Title:	AI-Enabled Antenna and Radar Systems for Non-Invasive Biomedical Abnormality Detection		
Project Description:	This PhD project will investigate the development of AI-enabled antenna and radar technologies for non-invasive detection of biomedical abnormalities. The research will explore whether changes in biological tissue composition, fluid content or structural properties can produce distinctive radio-frequency (RF) signatures that enable differentiation between normal and abnormal conditions. The work will combine antenna engineering, ultra-wideband (UWB)/radar sensing, electromagnetic modelling, signal processing and artificial intelligence. Representative applications will include thoracic abnormalities, such as fluid accumulation or localised tissue changes, and bone/structural abnormalities, such as fracture-like changes. The research will initially use computational electromagnetic modelling to investigate sensing sensitivity and optimise antenna/radar configurations. Suitable tissue and structural phantoms will then be developed for controlled experimental measurements. RF measurements, including amplitude, phase, frequency-domain and time-domain responses, will be processed to identify discriminative features. Machine-learning and deep-learning approaches will be developed to distinguish normal and abnormal RF signatures and, where feasible, classify the type or approximate location of abnormalities. Explainable and responsible AI approaches will also be considered to support transparent interpretation of model decisions. The project will provide interdisciplinary training across RF engineering, biomedical sensing and AI, with potential outputs including novel sensing configurations, experimental datasets, AI algorithms, publications and a prototype platform for future biomedical and clinical research. **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 6 years, part-time study		

Support available (subject to satisfactory performance):

For Home students

- A full tuition fee waiver at the Home student rate for the duration of the scholarship.

For International students

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

Important information

- Tuition fees are subject to annual review and may increase during the course of study.
- This scholarship covers tuition fees only and does not include funding for living, accommodation, or maintenance costs.

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**
• A relevant background in Electrical/Electronic Engineering, Biomedical Engineering, Computer Engineering, Artificial Intelligence, or a closely related discipline.	**E**
• Experience or demonstrable interest in one or more of RF/antenna systems, electromagnetic modelling, signal processing, MATLAB/Python, machine learning or biomedical sensing.	**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 5th April 2027	**E**
Closing date for applications:	**Midnight UTC on 30th November 2026**
For further information contact: **S.Rana@greenwich.ac.uk**	**Dr Soumya Prakash Rana**

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 (FS-ES-04-2027-5)**– 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, 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.