

PhD studentship (Full-time)



Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Electrical and Electronic Engineering
Supervisors	Primary supervisor: Dr. Zhao Wang (Xi'an Jiaotong-Liverpool University) Co-supervisors: Dr. Eng Gee Lim (Xi'an Jiaotong-Liverpool University) Dr. Mark Leach (Xi'an Jiaotong-Liverpool University) Dr. Yi Huang (University of Liverpool, UK);
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Electromagnetic Wave Propagation and the Real-time Localization of Wireless Capsule in the Human Body 无线胶囊内视镜在人体内的电波传输及实时定位

Requirements:

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification), in electrical or electronic Engineering. Evidence of good spoken and written English is essential. The candidate should have an IELTS score of 6.5 or above, or an equivalent qualification, if the first language is not English. This position is open to all qualified candidates irrespective of nationality.

Degree:

The student will be awarded a PhD degree from the University of Liverpool (UK) upon successful completion of the program.

Funding:

The PhD studentship is available for three years subject to satisfactory progress by the student. The award covers tuition fees for three years (currently equivalent to RMB 80,000 per annum) and provides a monthly stipend of 3500 RMB as a contribution to living expenses. It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. It is a condition of the award that holders of XJTLU PhD scholarships carry out 300-500 hours of teaching assistance work per year. The scholarship holder is expected to carry out the major part of his or her research at XJTLU in Suzhou, China. However, he or she is eligible for a research study visit to the University of Liverpool of up to three months, if this is required by the project.

Project Description:

Wireless Capsule Endoscope (WCE), as a non-invasive technique, has been proposed to enable visualization of the whole Gastrointestinal (GI) tract from the stomach to the rectum.

This project is focused on the enhancement of the efficiency of the transmitting antenna used in the capsule. With proper design, the antenna elements should be less sensitive to human tissue influences and have enough bandwidth to transmit high resolution images and large amounts of data. Moreover, the enhancement of antenna efficiency would facilitate battery power savings and higher transmission data rates.

This project will also propose a novel radio propagation radiation model for receiving electromagnetic radiation from ingested sources in the GI tract. This proposed model will present the radiation characteristics for sources in the GI tract that should allow for the optimum design of more efficient telemetry systems. The characteristics will be determined using the finite-difference time-domain method with a realistic antenna model on an established fully segmented human body model.