

## PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Robotics
Supervisors	Principal supervisor: Dr. Yuanrui Huang(XJTLU) Co-supervisor: Professor Rizal Arshad (XJTLU) Co-supervisor: Dr. Guangliang Cheng (UoL)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Learning-Based Magnetic Localization and Feedback Control of Tendon-Driven Continuum Robots in Minimally Invasive Procedures
Contact	Please email <a href="mailto:yuanrui.huang@xjtlu.edu.cn">yuanrui.huang@xjtlu.edu.cn</a> (XJTLU principal supervisor's email address) with a subject line of the PhD project title.  The principal supervisor's profile is linked here: <a href="https://scholar.xjtlu.edu.cn/en/persons/YuanruiHuang/">https://scholar.xjtlu.edu.cn/en/persons/YuanruiHuang/</a>

### **Requirements:**

A Master's degree with Merit and a Bachelor's degree with first-class or upper second-class honors are required for PhD admissions. Exceptional candidates holding only a Bachelor's degree may be considered on an individual basis in certain disciplines.

Evidence of good spoken and written English is essential. The candidate should have an IELTS (or equivalent) score of 6.5 or above, 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 99,000 per annum). It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. The scholarship holders are expected to conduct the majority of their research at XJTLU in Suzhou, China. However, they may apply for a short-term research visit to the University of Liverpool if the project requires it.

### **Project Description:**

This project aims to develop a multi-segment tendon-driven continuum robot and a corresponding magnetic localization device. Expected outcomes include:

- 1. Tendon-Driven Continuum Robot System:** A multi-segment tendon-driven continuum robot composed of motors, driving tendons, and elastic deformation segments. The system uses motors to actuate the tendons, allowing the continuum robot to deform accordingly for effective intervention in narrow luminal scenarios.
- 2. Magnetic Localization Device and Algorithm:** Achieving precise localization of multiple magnetic sources by constructing a multi-sensor array. This project will develop an adaptively topology-optimized magnetic sensor array to maximize magnetic source signals, expand the workspace, and improve localization accuracy.
- 3. Feedback Controller for Continuum Robots Based on Magnetic Localization:** Integrating magnetic sources with the continuum robot to enable precise robot localization using magnetic localization algorithms.

For more information about doctoral scholarship and PhD programme at Xi'an Jiaotong-Liverpool University (XJTLU), please visit

<https://www.xjtlu.edu.cn/en/admissions/doctoral/entry-requirement-phd>

<https://www.xjtlu.edu.cn/en/admissions/doctoral/postgraduate-research-scholarships>

### **How to Apply:**

Interested applicants are advised to [yuanrui.huang@xjtlu.edu.cn](mailto:yuanrui.huang@xjtlu.edu.cn) (XJTLU principal supervisor's email address) the following documents for initial review and assessment (please put the project title in the subject line).

- CV
- Two formal reference letters
- Personal statement outlining your interest in the position
- Certificates of English language qualifications (IELTS or equivalent)
- Full academic transcripts in both Chinese and English (for international students, only the English version is required)
- Verified certificates of education qualifications in both Chinese and English (for international students, only the English version is required)
- PDF copy of Master Degree dissertation (or an equivalent writing sample) and examiners reports available