

PhD studentship (Full-time)



Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Applied Mathematics
Supervisors	Principal supervisor: Dr. Yina Liu, School of Science (XJTLU, Department) Co-supervisor: Prof. Changhai Ru(JITRI) Co-supervisor: Dr. Chun Zhao, School of Advanced Technology (XJTLU, Department) Co-supervisor: Professor/Dr. Haifei Zhang, Department of Chemistry (UoL, Department)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Robotic Manipulation of Cells and Intracellular Structures
Contact	Please email yina.liu@xjtlu.edu.cn (XJTLU principal supervisor's email address) or ruch@jitrimnai.com (JITRI supervisor's email) with a subject line of the PhD project title

Requirements:

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification), in Biology or a related field.

Evidence of good spoken and written English is essential. The candidate should have an IELTS 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:

This PhD project is a collaborative research project between XJTLU (<http://www.xjtlu.edu.cn>) and JITRI (Jiangsu Industrial Technology Research Institute) Micro-Nano Automation Institute, both of which locate at Suzhou, China. The student will be registered as an XJTLU PhD student but is expected to carry out the major part of his or her research at the Institute. Tripartite agreement will be signed among student, XJTLU and institute. The PhD scholarship 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 an annually stipend around 40,000~60,000 RMB as a contribution to living allowance.

Project Description

Advances in Biology and medicine demand robotic technologies for automated manipulation and characterization of cells and sub-cellular structures. For instance, robotic cell surgery and automated characterization of cells enable new frontiers in medicine. Robotic deposition of foreign materials into cells is poised to revolutionize drug efficacy tests for drug repurposing and personalized medication.

The research program of robotic manipulation of cells and intracellular structures involves three thrusts: robotic cell surgery, robotic drug screen, and robotic cancer diagnostics. Despite the diverse applications of these robotic cell manipulation systems, their common characteristics are automation via precision instrumentation and control, high throughput, and the elimination of operator skill dependence. A number of the projects on robotic cell manipulation and characterization are in collaboration with hospitals, clinics and pharmaceutical industry. We will further develop these technologies and perform large-scale clinical trial, testing of drug repertoires, and characterization of bladder tissue and cell samples from tissue banks. Via the development of enabling robotic cell manipulation technologies, the research program's ultimate goal is to tangibly impact biology, clinical practice, and drug development.

Therefore, new technologies for minimally invasive robotic biopsy of embryos and for 3D navigation and measurement inside a cell will be developed.

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

<http://www.xjtlu.edu.cn/en/study-with-us/admissions/entry-requirements>

<http://www.xjtlu.edu.cn/en/admissions/phd/feescholarships.html>

Supervisor Profile:

Principal Supervisor:

Link of Profile: <https://www.xjtlu.edu.cn/index.php?cultureKey=en&q=staff&alias=yina-liu>

Yina Liu received her B.S. degree of Electrical and Electronic Engineering in Xi'an Jiaotong-Liverpool University in 2011 and Ph.D. in Applied Mathematics from University of Liverpool, UK in 2015. She joined the School of Science in Xi'an Jiaotong Liverpool University as a Lecturer in Jan. 2016. Her main research interests focus on modelling and optimizing the structures and systems of triboelectric nanogenerator.

JITRI co-supervisor:

Link of Profile: <https://ieeexplore.ieee.org/author/37086075223>

Changhai Ru received the Ph.D. degree in mechanical engineering from the Harbin Institute of Technology, Harbin, China, in 2005. He became an Associate Professor in 2005 and a Full Professor in 2007 with Soochow University, Suzhou, China. His research specializes in developing micro/nano technologies and instruments for manipulating and drug spraying. (Based on [document published](#) on 28 October

2019).

How to Apply:

Interested applicants are advised to email Yina.Liu@xjtlu.edu.cn (XJTLU principal supervisor's email address) or ruch@jitrinai.com (JITRI supervisor's email) the following documents for initial review and assessment (please put the project title in the subject line).

- CV
- Two reference letters with company/university letterhead
- Personal statement outlining your interest in the position
- Proof of English language proficiency (an IELTS score of 6.5 or above)
- Verified school 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