

## PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Robotics
Supervisors	<p><i>Please list all the names in the supervisory team. It should be consistent with the information on your approved PGRS proposal.</i></p> Principal supervisor: Professor Eng Hwa Yap (XJTLU) Co-supervisor: Dr. Qifeng Lu (XJTLU) Co-supervisor: Professor Stephen Taylor (UoL)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	A Study on Vertical Structure-based Flexible Artificial Synaptic Transistors
Contact	<p>Please email <a href="mailto:qifeng.lu@xjtlu.edu.cn">qifeng.lu@xjtlu.edu.cn</a> (XJTLU co-supervisor's email address) with a subject line of the PhD project title.</p> <p>The co-principal supervisor's profile is linked here:  <a href="https://www.xjtlu.edu.cn/zh/departments/academic-departments/entrepreneur-college-taicang/staff/qifeng-lu">https://www.xjtlu.edu.cn/zh/departments/academic-departments/entrepreneur-college-taicang/staff/qifeng-lu</a></p>

### **Requirements:**

The candidate should have a first class or upper second class honours degree, or a master's degree (or equivalent qualification), in Microelectronics, Electrical Engineering or other related fields.

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:**

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). It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. 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 up to six months, if this is required by the project.

### **Project Description:**

Flexible artificial synapses, capable of processing signals efficiently and compatible with biological systems in morphology, are of great significance to make a revolution in the field of sensor technology. However, low energy-efficiency and performance degradation under deformation are main problems for existing devices. Therefore, a vertical structure-based synaptic transistor is to be proposed in this research. It aims to fabricate flexible artificial synaptic devices with low power consumption and high stability under deformation.

1. To reduce the power consumption by scaling the channel length of the proposed vertical structure-based transistor, which is directly controlled by channel material thickness. A power consumption of 10 fJ/spike is to be achieved after optimizing.
2. To demonstrate influences of deformation on material micro-structure, interfacial properties and device performance and improve the device stability under deformation. Proper working of the device is to be achieved at a bending curvature radius of 1 mm.

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 email [qifeng.lu@xjtlu.edu.cn](mailto:qifeng.lu@xjtlu.edu.cn) (XJTLU co-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