PhD studentship   (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Mathematical Sciences, Department of CS, Department of EEE
Supervisors	Principle supervisor: Dr Fei Ma (XJTLU, MS Department) Co-supervisor: Dr Bailing Zhang (XJTLU, CS Department) Co-supervisor: Dr Jeyan Thiyagalingam (UoL, EEE Department) Co-supervisor: Dr Limin Yu (XJTLU, EEE Department)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	AI based Karyotype analysis for genetic disorders and cancers identification 基于人工智能的染色体核型分析以用于遗传疾病和癌症诊断
Contact	Please email fei.ma@xjtlu.edu.cn (XJTLU principal supervisor's email address) 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 Mathematics, Computer Science, or Engineering. Knowledge in biomedical image processing, deep learning, machine learning is a plus. 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) 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:
Karyotyping of human chromosomes has become an important clinical procedure for screening and diagnosing genetic disorders and cancers. Karyotyping is a standard technique utilized to classify metaphase chromosomes into 24 types. Because manual karyotyping is a labor-intensive and time-consuming task, developing automatic computer-assisted karyotyping systems has attracted significant research interests in the last 30 years.

While there exist numerous methods for automated segmentation and classification of chromosomes, karyotyping analysis remains to be a challenging problem. This project firstly looks for a new customized deep learning network to segment overlapping human chromosomes. For the new network, the generative model G can be utilized to capture the data distribution, and the discriminative model D can be utilized to estimate the probability of samples. "Shortcut connections" will be used to perform identity mapping. Besides segmentation, this project will also look for deep learning models for ordering and pairing chromosomes, and for classification of chromosomes to detect genetic disorders and cancers.

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/feesscholarships.html

How to Apply:
Interested applicants are advised to email Fei.Ma@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 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)

Informal enquiries may be addressed to Dr. Fei Ma (fei.ma@xjtlu.edu.cn), whose personal profile is linked below,
http://www.xjtlu.edu.cn/en/departments/academic-departments/mathematical-sciences/staff/fei-ma