

PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Mathematics and Physics
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> <p>Principal supervisor: Professor/Dr Keqin Liu (XJTLU) Co-supervisor: Professor/Dr Hui Zhang (XJTLU) Co-supervisor: Professor/Dr Ehsan Azmoodeh (UoL)</p>
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Unified Theory for Reinforcement Learning
Contact	<p>Please email keqin.liu@xjtlu.edu.cn (XJTLU principal supervisor's email address) with a subject line of the PhD project title.</p> <p>The principal supervisor's profile is linked here: https://scholar.xjtlu.edu.cn/en/persons/kevin-liu/</p>

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:

The main issue addressed in reinforcement learning is to establish a probability statistical model that progressively approximates the actual system based on past observations and learning of parameters, and simultaneously obtain the optimal decision algorithm under the so-far learned model. However, the state-of-the-art of reinforcement learning suffers from the disadvantage of scatteredness of various models and algorithms. This project aims to connect the various branches of reinforcement learning using a unified theory. Under this blueprint, different problems are classified and directed to corresponding algorithm frameworks. For the goal of optimization, our development of algorithm frameworks will be based on comprehensive analysis and fusion of different theoretical branches of existing reinforcement learning, resulting in a unified theory based on rigorous mathematical proofs and supporting its application to solving practical problems.

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 keqin.liu@xjtlu.edu.cn 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