

PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Advanced Technology
Supervisors	Principal supervisor: Dr Yuanjian Li (XJTLU) Co-supervisor: Dr Zhao Wang (XJTLU) Co-supervisor: Dr Yi Huang (UoL)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	DRL-Enabled Resource Coordination for Coverttness-Aware and Energy-Efficient UAV-Aided IoT
Contact	Please email yuanjian.li@xjtlu.edu.cn with a subject line of the PhD project title. The principal supervisor's profile is linked here: https://scholar.xjtlu.edu.cn/en/persons/YuanjianLi

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.

Preferred Academic Background

Candidates with educational training in one or more of the following disciplines are encouraged to apply:

1. Information and Communications Engineering
2. Electrical and Electronic Engineering
3. Computer Science or Engineering
4. Applied Mathematics or Physics (with a focus on machine learning)

Technical Skills

Candidates should demonstrate proficiency in at least two of the following areas:

1. 5G/6G wireless communications

2. Internet of Things (IoT)
3. Deep reinforcement learning
4. Programming languages: Python or MATLAB
5. Familiarity with machine learning frameworks, e.g., PyTorch or TensorFlow

Research Experience (Preferred but not mandatory)

Research expertise in one or more of the following:

1. Resource allocation in 5G/6G wireless systems
2. Distributed or federated learning
3. Multi-agent systems or collaborative decision-making

Publication(s) in top-tier journals/conferences will be considered a plus

Soft Skills

1. Ability to work independently and as part of a collaborative research team
2. Self-motivated with a strong desire to push the boundaries of knowledge
3. Willingness to engage in interdisciplinary research bridging wireless communications, artificial intelligence, and signal processing

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:

Unmanned aerial vehicles (UAVs) can serve as aerial base stations and edge computing servers to enhance wireless network coverage and accelerate data processing in the Internet of Things (IoT). However, data transmission and task offloading face severe challenges in privacy protection and energy efficiency. To tackle these issues, this project aims to design deep reinforcement learning (DRL)-based intelligent decision-making frameworks for

collaborative resource management. Specifically, the project will 1) propose a DRL-driven joint UAV trajectory and transmit power optimization strategy to address the trade-off between covert communications and transmission efficiency; and 2) develop a multi-agent DRL (MADRL)-based joint communication and computation resource coordination algorithm to achieve energy-efficient multi-UAV-aided multi-access edge computing. This research enables UAV-aided IoT to achieve significant improvements in transmission covertness and offloading energy efficiency.

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/global/entry-requirements/>

<https://www.xjtlu.edu.cn/en/admissions/global/fees-and-scholarship>

How to Apply:

Interested applicants are advised to email yuanjian.li@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