

**PhD studentship (Full-time)**

Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Electrical and Electronic Engineering
Supervisors	Principle supervisor: Shaofeng Lu(Xi'an Jiaotong-Liverpool University) Co-supervisor: Lin Jiang (University of Liverpool, UK);
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Study on Integrated Energy-efficiency Optimisation Model for Trains with On-board Energy Storage Devices
Contact	Please email <a href="mailto:Shaofeng.Lu@xjtlu.edu.cn">Shaofeng.Lu@xjtlu.edu.cn</a> (principal supervisor's email address) and copy <a href="mailto:doctoralstudies@xjtlu.edu.cn">doctoralstudies@xjtlu.edu.cn</a> 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 Electrical Engineering, Computer Engineering, Applied Mathematics, Railway Engineering, Transportation Engineering or relevant subjects. Evidence of good spoken and written English is essential. The candidate should have an IELTS score of 6.5 or above, or an equivalent qualification, 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:**

Urban rail transit systems faced with an increasing pressure to improve its energy efficiency takes energy storage devices (ESDs) to recover the regenerative braking energy as one of the effect ways to improve the energy efficiency. In light of relatively small capacity of onboard ESDs, this project aims to study an integrated energy-efficiency optimization model for trains with on-board ESDs, which are to be optimised by Mixed Integer Linear Programming (MILP). This project tries to study the mechanism of energy saving for train operations with onboard ESDs and enhance the energy efficiency. Two key problems are focused in this project: first, the optimization of charging and discharging strategies for ESDs under constraints of train operations; second, the optimization of train operations considering the train's traction system characteristics. The proposed model integrates the characteristics of train operations and on-board ESDs to further improve the energy efficiency of train operations. The outcomes of this project will significantly contribute to the development of energy efficiency improvement technologies in urban rail transit systems.

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

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

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

**How to Apply:**

Interested applicants are advised to email [Shaofeng.Lu@xjtlu.edu.cn](mailto:Shaofeng.Lu@xjtlu.edu.cn) (principal supervisor's email address) the following documents and copy [doctoralstudies@xjtlu.edu.cn](mailto:doctoralstudies@xjtlu.edu.cn) (please put the project title in the subject line).

- CV
- Two reference letters
- Personal statement outlining your interest in the position
- Proof of English language proficiency (an IELTS score of above 6.5 or equivalent is required)
- 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. Shaofeng Lu ([Shaofeng.Lu@xjtlu.edu.cn](mailto:Shaofeng.Lu@xjtlu.edu.cn)), whose personal profile is linked below,

<http://www.xjtlu.edu.cn/en/departments/academic-departments/electrical-and-electronic-engineering/staff/shaofeng-lu>