PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of ……Advanced Technology……..
Supervisors	Principal supervisor: Professor/Dr…Shangbo Wang… (XJTLU) Co-supervisor: Professor/Dr…Eng Gee Lim…...(XJTLU) Co-supervisor: Professor/Dr…Zhu Xu…...(UoL)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Traffic State Prediction and Dynamic Traffic Control Strategy Development for Connected and Automated Vehicles
Contact	Please email Shangbo.wang@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/Engineering. 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:

This project mainly focuses on traffic state prediction and investigation of dynamic traffic control strategy for Connected and Automated Vehicles (CAVs). In contrast to the traditional transport systems with only human-driving vehicles, the control policy in each CAV can be exactly pre-defined so that the states such as vehicle position, speed, acceleration and headways can be predicted by a given control policy. To fully utilize the reduction of uncertainty, this project will propose a hybrid traffic state prediction model, which incorporates a traffic model with reduced uncertainty into data-driven models such as RNN (Recurrent Neural Network) or DL (Deep Learning) to achieve a better prediction accuracy. In presence of CAVs, traffic control policy may become dynamic and cooperative because of rapid change of environment and V2X technologies. The dynamic control policy relies on a large amount of real-time data collected from loop detectors, GPS, radar, camera and V2X, and then causes a change of traffic state in future time instants. That means, predicted traffic state and control policy should have mutual influence, which can be utilized to improve the prediction accuracy and control policy. The project will propose a joint cooperative and dynamic control policy, which uses reinforcement learning technique to learn the optimal dynamic control policy from the current and predicted traffic state, and jointly update the predicted traffic state via the current control policy. The proposed control strategy should consider cooperation between different vehicles and traffic signal to maximize the network capacity and reduce the overall travel time at the network equilibrium point.

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…….@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 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