

PhD studentship (Full-time)



Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Electrical and Electronic Engineering (EEE)
Supervisors	Principle supervisor: Dr Kyeong Soo (Joseph) Kim (XJTLU, EEE) Co-supervisor: Dr Sanghyuk Lee (XJTLU, EEE) Co-supervisor: Professor Alan Marshall (UoL, EEE)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Scalable and Energy-Efficient Multi-Building and Multi-Floor Indoor Localisation/Navigation based on Deep Neural Networks with a Multivariate Database
Contact	Please email Kyeongsoo.Kim@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 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 5,000 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:

The use of deep neural networks (DNNs) for indoor localisation/navigation is a relatively new area of research; the work in this area has been reported in publications since around 2016. This project will investigate large-scale multi-building, multi-floor indoor localisation/navigation based on advanced DNN architectures, including convolutional neural network (CNN) and recurrent neural network (RNN), and a multivariate database consisting of Wi-Fi received signal strength (RSS), geomagnetic field intensity, and data from other sensors measurable with typical smartphones, in order to explore temporal and spatial correlations of user locations/trajectories, which are in their early stage and yet to be fully investigated. Considering the unique advantage of a DNN-based solution, i.e., once trained, it does not need the database any longer but carries necessary information in DNN weights, the results from this project could open a door for a future secure and energy-efficient indoor localisation/navigation system exclusively running on mobile devices without exchanging any data with a server.

Throughout the project, a doctoral student is to investigate DNN-based large-scale multi-building and multi-floor indoor localisation/navigation schemes and implement a prototype system for the performance evaluation of the proposed schemes on XJTLU campus. To successfully carry out this project, the doctoral student should have good programming skills (especially Python and mobile App programming) and experience of working with deep learning frameworks including TensorFlow/Keras and/or PyTorch.

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/feescholarships.html>

How to Apply:

Interested applicants are advised to email Kyeongsoo.Kim@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)
- PDF copy of Master Degree dissertation (or an equivalent writing sample) and examiners reports available

Informal enquiries may be addressed to Dr Kyeong Soo (Joseph) Kim (Kyeongsoo.Kim@xjtlu.edu.cn), whose personal profile is linked below,

- <http://www.xjtlu.edu.cn/en/departments/academic-departments/electrical-and-electronic-engineering/staff/kyeong-soo-joseph-kim> (@XJTLU)
- <https://kyeongsoo.github.io/> (@GitHub)