

PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Electrical and Electronic Engineering
Supervisors	Principle supervisor: Dr. Limin Yu (XJTLU, Department of Electrical and Electronic Engineering) Co-supervisor: Dr. Xu (Judy) Zhu (UoL, Department of Electrical Engineering and Electronics) Co-supervisor: Professor Enggee Lim (XJTLU, Department of Electrical and Electronic Engineering) Co-supervisor: Dr. Fei Ma (XJTLU, Department of Mathematical Sciences)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Rational Orthogonal Wavelet Applied to Target Detection and Tracking in Underwater Acoustic Sensor Networking (基于有理正交小波的水声传感器网络目标检测与跟踪)
Contact	Please email limin.yu@xjtlu.edu.cn (XJTLU principal supervisor's email address) and copy doctoralstudies@xjtlu.edu.cn 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 Telecommunications Engineering or Electrical and Electronic 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) 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:

The aim of the project is to explore novel fusion algorithms, statistical inference and machine learning algorithms, and utilise distributed signal detection technology to achieve accurate localisation, identification and tracking of multiple targets in real-time. Rational orthogonal wavelet (ROW) with an ultrafine fractional scale dilation factor will be applied in the system design. ROW-based wideband acoustic signal processing facilitates flexible orthogonal signal decomposition and recombination with a fusion algorithm. It enables further expansion of single target single detector scenario to the multi-target multi-sensor nodes scenarios. Standard machine learning algorithms, e.g., artificial neural networks, deep learning and Bayesian networks, will be applied and evaluated on their performance in the estimation/prediction for target localization, identification and tracking. The technology developed in this project provides the possibility to investigate commercial applications of acoustic/sonar technology in a network context, and to explore the growing prospect of ocean/lake district economy.

The project involves **substantial mathematical derivation**, **computer programming**, and **limited field tests** with pool experiments and sea trials. The PhD student is required to have a **strong interest** and **solid knowledge/experience** in *statistical signal processing*, *Matlab programing*, *optimisation* and *machine Learning*.

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/entry-requirements.html>

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

How to Apply:

Interested applicants are advised to email limin.yu@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)

Informal enquiries may be addressed to Dr. Limin Yu (limin.yu@xjtlu.edu.cn), whose personal profile is linked below,

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