**PhD studentship (Full-time)**

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| Institution | Xi'an Jiaotong-Liverpool University, China |
| Department | Department of EEE |
| Supervisors | Principle supervisor: Professor Kaizhu Huang (XJTLU, EEE)<br>Co-supervisor: Dr Rui Zhang(XJTLU, MS)<br>Co-supervisor: Dr Yannis Goulermas (UoL, CS) |
| Application Deadline | Open until the position is filled |
| Funding Availability | Funded PhD project (world-wide students) |
| Project Title | Adversarial Deep Learning Theory and Its Application<br>对抗机器学习理论及应用 |
| Contact | Please email kaizhu.huang@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 Computer Science, Pattern Recognition, Mathematics, Electrical Engineering and related fields. 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 5000 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 objective of this project is to engage the robust minimax theory to develop a unified adversarial classification framework that takes into account uncertainty from data. Aiming at promoting the classification performance of deep neural networks, e.g., Generative Adversarial Networks (GAN), the proposed methodology attempts to exploit the adversarial setting (in particular the theory of adversary example) to study classification approaches as well as the involved efficient optimization algorithms. The intended research will target a unified and scalable adversarial classification framework that assumes no specific attack, no specific perturbation, and no specific loss function. Our proposed research outcome would be expected to applied in pattern recognition, Computer vision, and machine learning.

本研究尝试考虑数据的不确定性，在理论上建立一种统一鲁棒的最小最大(最大化最坏情况下)的识别精度的对抗学习分类器设计及其应用框架；我们将针对深度神经网络比如生成对抗网络，利用对抗样本（adversarial example）的思路，研究其分类算法和高效优化算法，开发具有可扩展性、不针对特定攻击、特定扰动、特定损失函数的一种相对普适的对抗分类器设计方法。基于对抗学习的分类器设计方法具有较强的理论意义和学术影响，或有助于推动模式识别和机器学习领域的发展，同时又具有重要的应用价值，可被期待应用于模式识别、计算机视觉和人工智能相关的各种场合当中。

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/feesscholarships.html

**How to Apply:**

Interested applicants are advised to email kaizhu.huang@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 Professor Kaizhu Huang (kaizhu.huang@xjtlu.edu.cn), whose personal profile is linked below,

http://www.xjtlu.edu.cn/en/departments/academic-departments/electrical-and-electronic-engineering/staff/kaizhu-huang

*http://www.premilab.com/KaizhuHUANG.ashx*