

PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
School	School of Advanced Technology
Supervisors	Principal supervisor: Dr. Wei Wang (XJTLU) Co-supervisor: Dr. Qiufeng Wang (XJTLU) External supervisor: Professor. Kaizhu Huang (Duke Kunshan) Co-supervisor: Professor/Dr. Anh Nguyen (UoL)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Fine-grained Entailment Analysis of Large Language Model Hallucination
Contact	Please email Wei.Wang03@xjtlu.edu.cn (XJTLU principal supervisor's email address) with a subject line of the PhD project title. The principal supervisor's profile is linked here: https://scholar.xjtlu.edu.cn/en/persons/WeiWang03

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, especially on areas such as machine learning, data mining, intelligent computing, natural language processing or related ones.

Evidence of good spoken and written English is essential. The candidate should have an IELTS score of 6.0 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 99,000 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:

Title: Fine-grained Entailment Analysis of Large Language Model Hallucination

Keywords: neuro-symbolic reasoning, natural language processing, large language model hallucination, language entailment, reinforcement learning

Summary: The project is to design and develop methods and algorithms for detection and evaluation of hallucinated contents generated by large language models. Based on theories of language entailment and neuro-symbolic reasoning, it aims to construct models that can perform language inference at more fine-grained levels, i.e. sentences and tokens. The research will elevate the existing research by entailment analysis at sentences level for more accurate detection and realistic evaluation of hallucinated contents. Further, it will exploit neuro-symbolic reasoning for entailment analysis at tokens level. This method integrates the complementary strength of symbolic reasoning and representational learning to handle nuanced lexical and syntactic variations in natural languages for which neural models have been ineffective. The research has great potential and considerable significance for future large language model development and evaluation in terms of faithfulness, reliability and safety.

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