## PhD studentship (Full-time)

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| Institution | Xi'an Jiaotong-Liverpool University, China |
| School | School of Robotics |
| Supervisors | Principal supervisor: Dr. Ibrahim M. Mehedi (XJTLU)<br>Co-supervisor: Dr. Heba Lakany (University of Liverpool)<br>Co-supervisor: Dr. Sze-Hong Teh (XJTLU) |
| Application Deadline | Open until the position is filled |
| Funding Availability | Funded PhD project (worldwide applicants) – 50% tuition-fee scholarship |
| Project Title | Study on Robust Fractional Order Dynamic Inverse (RFODI) Control System for Industrial Automation |
| Contact | Please email Ibrahim.Mehedi@xjtlu.edu.cn with the PhD project title in the subject line.<br><br>Principal supervisor profile:<br>https://scholar.xjtlu.edu.cn/en/persons/IbrahimMehedi |

**Requirements:**

A Master's degree with Merit and a Bachelor's degree with first-class or upper second-class honors are required for PhD admissions. Exceptional candidates holding only a Bachelor's degree may be considered on an individual basis in certain disciplines.

Evidence of good spoken and written English is essential. The candidate should have an IELTS (or equivalent) 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 50% tuition fee reduction for three years (RMB 148,500 total value). It also provides up to RMB 16,500 to allow participation at international conferences during the period of the award. The scholarship holders are expected to conduct the majority of their research at XJTLU in Suzhou, China. However, they may apply for a short-term research visit to the University of Liverpool if the project requires it.

**Project Description:**

This PhD project will develop and experimentally validate a robust fractional-order dynamic inverse (RFODI) control framework for industrial automation. It combines fractional-order control and dynamic inversion to improve stability, tracking accuracy and disturbance rejection in nonlinear and uncertain engineering systems. The research includes mathematical modelling and stability analysis; design of robust control laws and computationally efficient algorithms; simulation under parameter uncertainty, noise and external disturbances; and real-time validation on suitable robotics or industrial automation platforms. Performance will be compared against conventional and existing advanced control techniques using response time, overshoot, tracking error, robustness and implementation cost. The project aims to deliver both theoretical contributions to robust intelligent control and an experimentally validated solution relevant to industrial robotics, manufacturing and process control. Applicants with backgrounds in control engineering, robotics, electrical engineering, mechatronics, automation or related disciplines, and experience in MATLAB/Simulink, programming and/or experimental systems, are particularly encouraged to apply.

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/doctoral/entry-requirement-phd
https://www.xjtlu.edu.cn/en/admissions/doctoral/postgraduate-research-scholarships

**How to Apply:**

Interested applicants are advised to email Ibrahim.Mehedi@xjtlu.edu.cn 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