PhD studentship (Full-time)

Institution	Xi'an Jiaotong-Liverpool University, China
Department	Department of Computing
Supervisors	Principal supervisor: Dr Thomas Selig (XJTLU, Department of Computing) Co-supervisor: Professor Steven Guan (XJTLU, Department of Computing) Co-supervisor: Dr Yi Zhang (UoL, Department of Mathematical Sciences)
Application Deadline	Open until the position is filled
Funding Availability	Funded PhD project (world-wide students)
Project Title	Stochastic variants of the Abelian sandpile model
Contact	Please email Thomas.Selig@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 Mathematics, Computer Science or a related discipline. They should have some knowledge of Discrete Mathematics and a strong background in one or more of the following areas: Combinatorics, Probability Theory, Theory of Algorithms. Prior knowledge of the sandpile model is not expected. 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:

In the sandpile model, grains of sand are added at random to vertices on a graph. When the number of grains at a vertex reaches a certain threshold, that vertex becomes unstable. Unstable sites topple, sending grains of sand to their neighbours on the graph. A special vertex, called the sink, absorbs excess grains, and so the process eventually stabilises.

The model was originally introduced in 1988 by Bak et al., and generalized and formalized by Dhar in 1990. Since then, it has attracted considerable interest in different fields - mathematics, computer science, statistical physics - with applications in areas such as earthquakes, the firings of brain cells, and forest fires.

This project aims to study stochastic variants of this model, where an extra layer of randomness is introduced into the topplings of sites. Instead of sending grains to each of its neighbours, an unstable site chooses a random subset of these neighbours to send grains to, ignoring the others.

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 Thomas.Selig@xjtlu.edu.cn 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. Thomas Selig (Thomas.Selig@xjtlu.edu.cn), whose personal profile is linked below,
https://www.xjtlu.edu.cn/en/departments/academic-departments/computer-science-and-software-engineering/staff/thomas-selig