

Four post-doctoral positions at Hong Kong University of Science and Technology (HKUST) for studying tree stability

Project background

Urban greening has been advocated in metropolitan cities worldwide, with the aim to restore ecosystems and 'reclaim the natural environment' within the built environment. Governments have invested billions of dollars in planting trees and building urban forests. However, the increasing intensity of cyclones and hurricanes caused by recent environmental change has led to increasing numbers of tree failures. Existing methods of assessing urban tree risk are qualitative and empirical, relying on tree professionals' experiences to evaluate tree health.

Assessing tree stability under wind is complex and requires cross-disciplinary knowledge of the wind-tree-soil interaction. Funded by the Hong Kong Research Grant Councils (RGC), a cross-disciplinary and cross-institutional team with diverse backgrounds of tree ecology, soil science, wind/structural engineering and geotechnical engineering will combine their expertise to study tree stability problems. **Trees will be viewed as nonlinear, flexible structures subject to dynamic loading, a system that can be analysed quantitatively via engineering principles.**

This project will adopt an all-round complementary research methodology, including field testing, physical modelling, numerical modelling and reliability analysis. We have recruited several post-doctoral fellows who will focus on the physical and numerical soil-root interaction and tree biomechanics. This position looks for competent candidates for studying **wind-tree interaction**.

Job description:

Candidate of this post is expected to assist in the design and manufacturing of a new wind tunnel system that is tailor-made for studying wind-tree mechanical interaction. He/she is also expected to design and conduct instrumented wind tunnel tests to study aerodynamics of trees of different canopy architecture and how tree deformation affects drag force (aka reconfiguration).

Job requirements:

(1) A PhD degree in wind engineering, or equivalent; (2) track records to publish articles in top-tier international journals; (3) interest in **collaborative multi-disciplinary research**; (4) able to conduct research work independently yet collaboratively; (5) abilities to communicate verbally and in written form in English.

Experience in designing and conducting wind tunnel tests is **mandatory**.

Main Duties (apply to all posts):

- Design and implementation of research tasks assigned independently
 - Synthesis of research findings in forms of journal article (primary) and conf. proceedings
 - Provision of the support of project administration
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Conditions of employment:

Salary is competitive and will be commensurate with qualifications and experience. Fringe benefits including medical & dental benefits and annual leave will be provided where applicable. Initially appointment will normally be made on a 1-year contract, renewable for a maximum of 3 years subject to performance and research output.

Application:

Interested candidates are invited to send (i) a motivation letter (< 2 pages); (ii) a CV including a full list of publication (both under review and in press/accepted); (iii) names of 2 references; and (iv) abstract of PhD thesis and copies of master or/and doctoral degrees and transcripts to the project coordinator, Dr Anthony Leung (ceanthony@ust.hk).

Shortlisted applicants are expected to give a short presentation of their PhD work (remotely) and be interviewed by project members. Review of applications will begin immediately and continue until the positions are filled. Starting date is as soon as possible.

Contact: For more information about these positions, please contact the project coordinator:

Dr Anthony Leung; Email: ceanthony@ust.hk

Assistant Professor in Geotechnical Engineering

Associate Director of Geotechnical Centrifuge Facility

Department of Civil and Environmental Engineering, The HKUST

About *Department of Civil and Environmental Engineering* at the HKUST (www.ce.ust.hk)

The Department has 30 faculty members, teaching about 480 undergraduate students and 200 postgraduate research students. Offering academic degrees in BEng, MSc, MPhil and PhD, we conduct comprehensive teaching and research programs in basic and applied aspects of civil engineering. The Department is equipped with state-of-the-art research facilities and is ranked consistently among the **top 20** in the world according to the **QS World University Rankings**.