Civil Engineering Research Group

Invitation to Seminar

- **Damage detection on Fiber Reinforced Polymer (FRP) structures using machine and deep learning methodologies**

Ahmed is currently conducting research within the Structural Health Monitoring (SHM) field, where he is currently investigating methodologies for damage prediction in civil structures focusing on bridges, using Machine and Deep Learning algorithms. The main objective of his research is to identify an ideal methodology that can provide an accurate level of damage prediction from unsupervised data; this will constitute the main framework of his talk in this seminar session.

Ahmed S. Khaled PhD student, Civil Engineering, University of Warwick

Ahmed has worked within SHM of energy structures under the supervision of Professor Feargal Brennan (Director of Cranfield - Oxford Renewable Energy Marine Structure research centre) with research scope related to crack detection in both ferrous and non-ferrous materials. Ahmed holds a BEng (Hons) degree from University of Glasgow and an MSc from Cranfield University. He started his PhD at Warwick in 2018 and his project is supervised by Dr Irwanda Laory.

- **Landslide risk assessment with material point method and generalized multivariate geotechnical random field theory**

In landslide analysis, reliable prediction of mass flow's influence zone is significantly difficult due to inherent heterogeneity of soils and their spatially varying geological properties. In this seminar, a newly developed probabilistic risk assessment framework is discussed to evaluate the landslide probability through prediction of the landslide influence zone considering the effects of heterogeneous soil properties. Material point method is used to simulate the large deformations during landslide failure. The spatial variation in soil's shear strength parameters is modeled by non-Gaussian random fields, which are discretized by Cholesky matrix decomposition method, to incorporate the effects of soil spatial heterogeneity on the post-failure deformations. Furthermore, a risk factor is defined to quantify the degree of risk to facilities or structures located in the vicinity of the slope. To demonstrate the capability of the probabilistic risk assessment framework, a benchmark example of heterogeneous clay slope is simulated, and associated risk zone is predicted and discussed.

Derek Ma PhD student, Civil Engineering, University of Warwick

Derek received his B.Eng. in 2013 and obtained his MSc degree with distinction in Geological Engineering from Southwest Jiaotong University in China in 2016. In 2016, he worked as an assistant researcher in the Southwest Jiaotong University and collaborated with China Geology Survey to do research about the failure mechanism of large-scale consequent bedding rockslides in southwest China. In 2017, he visited the University of Canterbury as a visiting scholar in New Zealand. Currently, He is pursuing his PhD degree in the research direction on the stochastic assessment of post-failure behaviour of landslides and risk assessment of natural hazards with data-driven tools, and his project is supervised by Dr Mohammad Rezania.

Wednesday 7 April 2021, 12.00pm-1:00pm
Online (via Teams)

The seminar is open to all.
For more information, contact Dr Rezania (m.rezania@warwick.ac.uk).