

You are cordially invited to the seminar organised by
Nanyang Centre for Underground Space (NCUS).

Seminar on

Long Infrastructure Tunnels: Trends and Challenges for the Future

Abstract:

The fact that at constructions of long tunnels at great depth risks result from geological uncertainties is known. In order to reduce the probability of encountering adverse or unforeseen conditions for tunnelling, high effort and large costs for site investigations are necessary. Digitalisation will change the way of gathering geological data and the methods of rock classification in the field of tunnelling.

The presentation will focus on the experiences with the recent (long) base tunnel projects through the European Alps. In the last years a rapid increase in the successful application of digital techniques (Building Information Modelling – BIM and Machine Learning – ML) for a variety of challenging tasks can be observed. Potential for ML is seen in the automatic rock mass behaviour classification utilising tunnel boring machine (TBM) advance-data, in the update of geological prognosis ahead of the tunnel face and in the way of interpretation of monitoring results.

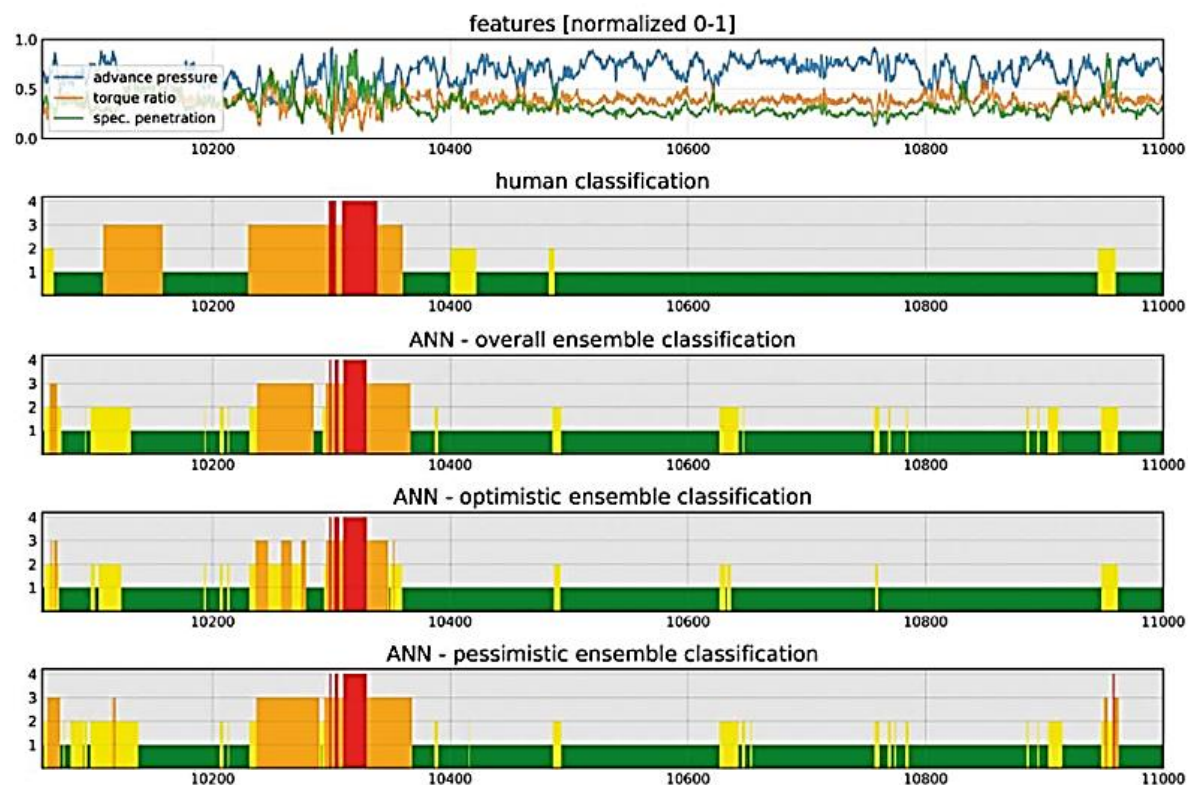


Fig. 7. TM 10,000 bis 11,000: human classification 19.0% GI34; overall ANN ensemble classification 13.3% GI34; optimistic ANN ensemble classification 8.57% GI34; pessimistic ANN ensemble classification 15.7% GI34

[Erharder, G.H., Marcher, T. & Reinhold, C. 2019. Application of Artificial Neural Networks for Underground Construction – Chances and Challenges – Insights from the BBT Exploratory Tunnel Ahrental Pfons. Geomechanics and Tunnelling, Vol. 12, No. 5. DOI: 10.1002/geot.201900027]

Speaker:

Univ.-Prof. Dipl.-Ing. Dr.-Ing. Thomas Marcher, Department Head, Institute of Rock Mechanics and Tunnelling, Graz University of Technology, Austria

Date: 10 December 2019 (Tuesday)

Time: 9.30am to 10.30am

Venue: CEE Seminar Room B, Block N1, Level B1, N1-B1b-16

School of Civil and Environmental Engineering (CEE), Nanyang Technological University | Singapore