

IGT-IBK-Kolloquium

Friday, 12 April 2024

Improve the resilience of masonry infrastructure using machine learning and high-fidelity models

Prof. Vasilis Sarhosis, School of Engineering, University of Leeds

16:00 - 17:00, ETH Zurich, Hönggerberg, HIL E9

Masonry infrastructure, such as bridges, viaducts and tunnels form a significant part of the European's critical infrastructure stock. Most of this infrastructure is ageing and are showing significant signs of deterioration and damage. Weathering, demands of increasing load intensity and axle loads, plus factors such as increased frequency of flood events due to climate change have introduced extreme uncertainty in the long-term performance of such infrastructure assets. Besides, much of our masonry infrastructure has significant heritage and cultural value. Failure of such infrastructure could lead to direct and indirect costs to the economy and society and hamper rescue and recovery efforts. This talk will present state of the art developments towards the inspection and assessment of existing masonry structure. Reference will be made to novel ways for identification of defects and their diagnosis using machine learning and structural inspection using surrogate models developed through high fidelity computations

Prof. Vasilis Sarhosis holds the Chair in Resilient Structures and Infrastructure at the School of Civil Engineering, University of Leeds. He is a Chartered Engineer (CEng), Fellow of the Institute of Civil Engineering (FICE), and Fellow of the Higher Education Academy (FHEA) in the UK. He is currently chairing the National Scientific Committee on the Analysis and Restoration of Structures of Architectural Heritage in UK (ISCARSAH-UK) which is part of the ICOMOS-UK. His research is focusing on the quantification of the degradation of damage in existing ageing masonry infrastructure stock subjected to different environmental conditions and loads. He works together with industry to develop technologies and tools to reduce maintenance demands and improve the life-span of ageing masonry infrastructures and buildings.

