

Robust Dynamical Systems Monitoring: Learning by Modeling

Speaker: Prof. Eleni Chatzi, ETH Zurich Switzerland

Host: Dr. Jianjun Qin, Shanghai Jiao Tong University

Time: 05.12.2022, 14:30 – 15:30 Central European Time

Lecture outline:

SHM comprises a hierarchy across levels of increasing complexity aiming to i) detect damage, ii) localize and iii) quantify damage, and iv) finally offer a prognosis over the system's residual life. When considering higher levels in this hierarchy, including damage assessment and even performance prognosis, purely data-driven methods are found to be lacking. For higher-level SHM tasks, or for furnishing a digital twin of a monitored structure, it is necessary to integrate the knowledge stemming from physics-based representations, relying on the underlying mechanics. This talk discusses implementation of such a hybrid approach to SHM for tackling the aforementioned challenges with particular focus on applications for wind turbine structures.

About the speaker:

Eleni Chatzi is an Associate Professor and Chair of Structural Mechanics and Monitoring at the Department of Civil, Environmental and Geomatic Engineering of ETH Zurich, Switzerland. Her research interests include the fields of Structural Health Monitoring (SHM) and structural dynamics, nonlinear system identification, and intelligent life-cycle assessment for engineered systems. She has authored more than 300 papers in peer-reviewed journals and conference proceedings, and further serves as an editor for international journals in the domains of Dynamics and SHM. She led the recently completed ERC Starting Grant WINDMIL on the topic of "Smart Monitoring, Inspection and Life-Cycle Assessment of Wind Turbines". Her work in the domain of self-aware infrastructure was recognized with the 2020 Walter L. Huber Research prize, awarded by the American Society of Civil Engineers (ASCE).



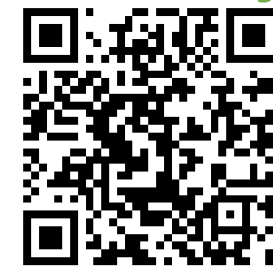
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