



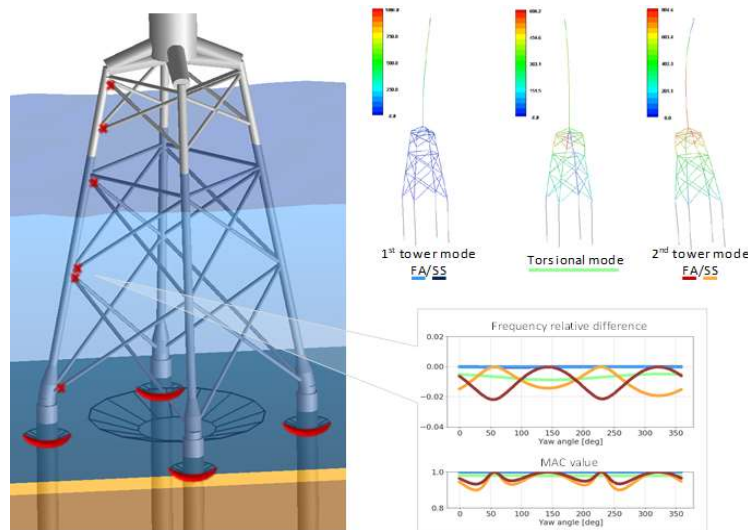
Offshore Engineering Society

Machine learning models for damage diagnosis of offshore wind turbines

Wednesday 4th November 2020 at 17:30

This meeting will be held as a Zoom Webinar

(The event is only open to OES and ICE members - Please see registration notes)



Classification-based and anomaly detection approaches are applied for capturing deviations due to structural damage either through the 10-min statistics of the standard signals or the modal properties of a structure. The performance of the algorithms is quantified in terms of correct identification (as belonging to a class and/or behavioural group) and their accuracy through the relative percentage of successful detection and false alarms raised. The general principles for the model selection, training and testing are: (i) The use of a grid learning strategy for solving methods and parameters tuning; (ii) Fitting of the best model to the training set; (iii) Its performance is derived on test sets for healthy and damaged structure, as well as variation of the environmental conditions; (iv) If the KPIs are not within the targeted boundaries, the amount and type of variables and properties (features) used for the training are modified and the procedure is repeated. The potential of implementing these algorithms based on simulated or measurement data and in the latter case what type and quality of measurement data are required are investigated.

SPEAKER:

Athanasios Kolios (Dip Eng, MSc, PhD, MBA, PGCAP, FCEng MIMechE, FHEA)



is a Professor in Risk and Reliability at the University of Strathclyde, UK, and Vice-President of the European Academy of Wind Energy. He is a qualified academic and consultant with expertise in asset integrity management, particularly focusing on energy applications. He has experience in the development and optimisation of both qualitative and quantitative methods for risk management and reliability engineering as well as data-driven integrated frameworks for the development of effective operational strategies. During his academic career he has participated in several projects related to the development, analysis and optimisation of energy systems through a balanced portfolio of research council funded, industry sponsored and specialist consultancy projects of value exceeding £20m as PI/co-PI/co-I. Indicative projects include the SLIC JIP (2012-2017), the H2020-ROMEO (2017) project, the EPSRC INNO-MPP (2017) project, the H2020-ENHANCE-ITN (2020) and the Wind and Marine Systems and Structures Centre for Doctoral Training (2019). Professor Kolios is a Fellow Chartered Engineer of the Institution of Mechanical Engineers, a Fellow of the Higher Education Academy and Chairman of the ISSC Offshore Renewable Energy Committee. He has authored more than 180 peer-reviewed journal and conference papers.



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REGISTRATION

Registration for this webinar will be open immediately to Offshore Engineering Society Individual Members and employees of Corporate Members. Members of the Institution of Civil Engineers may register from 11th October

For security reasons anyone who is not a member of the OES or ICE will not be permitted to attend. However, anyone wishing to join the Offshore Engineering Society may do so on-line at www.oes.org.uk.

The link to register for the event is:

https://us02web.zoom.us/webinar/register/WN_FmaBZIQWRLCe_Fa6y_shjQ

Please ensure you enter all the requested data and that it is accurate as failure to do this may impact your registration.

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