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CALL FOR ABSTRACTS

Special session on
Health monitoring and predictive maintenance of offshore systems

Description

This special session focuses on leveraging data science, artificial intelligence (AI), and numerical simulation for monitoring and prognosis of the health and performance of offshore systems and floating structures.

Motivation

Offshore structures and systems, for instance oil and gas extraction facilities and wind turbines, are subjected to complex, stochastic, and time-dependent loads, induces by wind and sea motions. These structures are very expensive to deploy, and potential failures entail massive costs or environmental damages. An efficient maintenance strategy is thus crucial to the long term safety and profitability of each project. This requires monitoring, diagnosis of discrepancies with expected behaviors, and prognosis of lifespan and performance.

Objective

The objective of this special session is to share knowledge and issues about offshore structures monitoring, which encompass:

- Data management: gauges and sensors, data delivery, data quality.
- Digital twin approaches: physical modeling compared with machine learning models, high-dimensional problems.
- Diagnosis and prognosis: Bayesian inference, Monte-Carlo Markov chains algorithms, AI.
- Uncertainty modeling, rare event probability estimation, reliability and robustness.

Organizer

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