

Special Issue

Advancements in the Use of Distributed Sensing and Edge/Cloud Diagnostics in Structural Health Monitoring Systems

Message from the Guest Editors

Structural health monitoring (SHM) based on distributed sensing is increasingly investigated in engineering fields to turn preventive maintenance into predictive lifecycle management. Advances in Industry 5.0 and the Internet of Things, including improvements in communication, miniaturization, and protocols, enable computing close to data sources, reducing latency, especially for big data streaming. This is exacerbated by artificial intelligence (AI) and machine learning evolution, promising but data-demanding. Hence, deploying AI algorithms at the network edge is crucial for real-time data processing and efficient decisions. Edge/cloud computing and optimization in SHM systems are of utmost importance, with strong emphasis on trustworthiness and reliability assessment. It is expected that distributed sensing and edge/cloud analysis related to the field of SHM is described thoroughly and demonstrated in a relevant environment. Numerical investigations may also help to provide additional insights. In any case, it is mandatory to show experimental results with permanently installed sensors from a dedicated laboratory experiment, possibly combined with a demonstration in the field.

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