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Empowering predictive maintenance with physics-informed machine learning and digital twins



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Abstract

Predictive maintenance has become a key enabling technology for today's industry. In this talk, we discuss some of our recent work aiming at addressing the limitations of data-driven approaches by enhancing them with physical knowledge and digital twins. In the first part of this talk, we present a two-phase physics-informed deep learning architecture to integrate physical knowledge for remaining useful life prediction. In the second part of this talk, we present a new framework for developing deep learning models for fault diagnosis based on digital twin. The results

About the Speaker

Professor Zhiguo ZENG received the Ph.D. degree in reliability engineering from Beihang university in 2016. After receiving his PhD, he joined CentraleSupélec, Université Paris-Saclay, and became a full professor in 2023. Dr. ZENG is an author/co-author of more than 100 papers in highly recognized international journals and conferences. His research has been funded by important government funding agencies like ANR and ERC, and also important industrial companies like EDF, SNCF, Orange and GE Healthcare. He is the co-head of the master program "Risk, Resilience and Engineering Management" in Université Paris Saclay.