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Fault Diagnosis, Prognostics and Health Management for Dynamic Systems based on Data-centric Methods

Invited Track Code: d6i7g

This proposal is endorsed by TC 5.1 Manufacturing Plant Control and the AMEST working group

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Abstract:

Accurate and real-time state cognition for complex dynamic systems is the key to ensuring the normal operation of the system, reducing the accident rate and maintenance costs. Thus, how to realize Prognostics and health management (PHM) efficiently has become one of the most attractive topics in both academia and industry. Complex dynamic systems such as control systems, power systems, electromechanical systems, and electronic systems in manufacturing industries are keen to apply PHM to

predict, diagnose, monitor, and manage the state or condition of engineering assets.

The overarching intention of this Open invited track is to publish new approaches dealing mainly (but not exclusively) with those state-of-the-art methods of signal processing, autonomic feature extraction, health assessment and diagnosis, and performance degradation prediction, health management strategy optimization. Emphasis will be focused on various leading-edge theories and methodologies, such as deep learning, digital twin, adversarial learning, and evolutionary game theory, which are expected to address the existing challenges for a real-world PHM system. If deemed relevant, integration techniques of diagnosis and prognostics-oriented maintenance strategy optimization can also be presented.

This Open invited track aims to aggregate the latest research efforts contributing to theoretical, methodological, and technological advances in detecting anomalies, forecasting potential degradation, and classifying faults by monitoring and analyzing signals collected from different complex dynamic systems, as well as proposing a new framework for maintenance strategy, automatically optimizing resources for health management. Prospective authors are invited to submit high-quality original contributions for this Open invited track, including Regular papers, Survey papers, or Discussion papers.

Potential topics of this Open invited track include but are not limited to:

- Multi-source signal fusion based advanced fault diagnosis methods
- State-of-the-art diagnosis and health assessment techniques for complex electromechanical systems
- State-of-the-art prognostics methods for remaining useful life and performance degradation
- Integration techniques of quality monitoring, diagnosis and prognostics in manufacturing processes
- Multidimensional clustering and management of monitoring data for PHM applications
- PHM methods for industrial embedded software defect prediction and proactive prevention
- Health management or maintenance strategy design and optimization
- Advanced applications of automatic fault detection and diagnosis for complex dynamic systems

Time schedule

- October 31, 2022 Deadline for paper submission
- February 01, 2023 Notification of acceptance/rejection
- March 31, 2023 Final paper submission
- 09-14 July 2023 22nd IFAC World Congress: Yokohama, Japan

Manuscript Preparation

For Manuscript Preparation please look at
http://www.ifac.papercept.net/conferences/support/support.php
For Manuscript submission please look at
https://ifac.papercept.net/conferences/scripts/start.pl

Upon submission, make sure to use the **Open invited track code: d6i7g**

For any further information, please contact the Open invited track Technical Committee

Guest Editors

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