CALL FOR PAPERS

Trends and Prospects in Health and Usage Monitoring System (HUMS)

for ICCAD 2025
July 1-3, 2025, Barcelona, Spain

Session Co-Chairs:

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Session description:

This special session deals with the problem of Health and Usage Monitoring Systems (HUMS) for rotor and fixed-wing aircraft. The integration of Artificial Intelligence (AI) into HUMS is revolutionizing aircraft management and maintenance. AI enhances decision-making processes, enabling real-time data analysis and predictive maintenance, which improves aircraft safety and performance. Key aspects include:

AI in HUMS: AI algorithms analyze vast amounts of HUMS data to identify condition indicators, enhancing maintenance strategies from time-based to condition-based approaches.

Real-Time Monitoring: HUMS systems continuously monitor aircraft health, generating trigger signals for maintenance when specific criteria are met. This real-time data transmission allows for immediate response to potential issues, thereby increasing operational safety.

While the benefits of AI in HUMS are significant, challenges such as data integrity and the need for robust algorithms remain critical for successful implementation in aviation systems.

The goal is to provide an opportunity to share some of your exciting high-quality research and innovative work on advances in HUMS to improve predictive and proactive maintenance in aircraft.

The topics of interest include, but are not limited to:

- Advanced signal processing techniques to extract fault features;
- Signal processing and data fusion to detect, diagnose, and trend faults in rotating machines;
- Sensor devices and sensing applications for machine condition monitoring;
- Signal processing techniques, sensors, and AI applications applied to vibrations and acoustics signals for predictive and proactive;
- Digital twins for a better understanding of rotating machines and the development of HUMS.

SUBMISSION

Papers must be submitted electronically for peer review by **January 31, 2025**
https://www.iccad-conf.com/submission/
All papers must be written in English and should describe original work. The length of the paper is limited to a maximum of 6 pages (in the standard IEEE conference double-column format).