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”DATA1#2 - CANCELLED - Multi-Source Information Fusion Fault Diagnosis for Rotating Machinery using Signal and Data Processing”

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Machine fault diagnosis is crucial in industrial systems to enhance reliability, lifetime, and service availability. Intelligent fault diagnosis (IFD) using artificial intelligence (AI) techniques has emerged as a promising approach for automating machine health assessment and reducing labor costs. One approach to improve fault diagnosis accuracy, which has become a highly relevant research topic, is to use multi-data fusion, which combines information from multiple sources to make a more informed decision. However, there is a lack of research focusing on the detection of combined machinery faults from multiple sensors. Indeed, when combined (and emerging) faults happen in different parts of the rotating machines their features are deeply dependent and the separation of characteristics becomes complex, while multi-sensor information can provide more comprehensive fault features to deal with the diagnosis and identification of multiple combined faults. This paper presents a comprehensive methodology for diagnosing combined faults using data fusion and machine learning techniques. The proposed approach leverages multiple types of sensor data, including vibration, current, temperature, and acoustic data, sensors to provide a comprehensive picture of the machine’s health. Our proposed methodology incorporates an ensemble learning approach and time-domain features to improve diagnostic accuracy. The proposed approach is tested on a publicly available dataset of rotating machinery with multiple faults. The results indicate that the method is viable and achieves good accuracy and efficiency. Keywords€” Machinery Fault diagnosis, Combined fault diagnosis, multi-sensor data fusion, Data and Signal processing, Broken rotor bar, Bearing fault

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