Damage Detection and Hierarchical Localization of Large Rotating Blades

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ABSTRACT:
To address the industrial challenges in health status assessment of large scale rotating blades, notably high false alarm rate and inaccurate damage location, we developed an intelligent platform, which incorporated damage detection, macro-scale positioning and super-resolution precise damage location. Firstly, anomaly detection of rotating blades was stably achieved by a specifically designed early-warning algorithm. Upon this, we established an explicit inversion model of damage characteristics from the macro-scale aspect. Then combined with an external microphone array, it enabled super-resolution acoustic imaging, consequently realizing the precise damage location. This platform can improve the accuracy of the large scale rotating blade operation and maintenance.