Variable Selection for Journal Bearing Faults Diagnostic Through Logical Combinatorial Pattern Recognition

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Abstract

Experts in industrial diagnostics can provide essential information, expressed in mixed variables (quantitative and qualitative) about journal bearing faults. However, researches on feature selection for fault diagnostic applications discard the important qualitative expertise. This work focuses on the identification of the most important features, quantitative and also qualitative, for fault identification in a steam turbine journal bearings through the application of logical combinatorial pattern recognition. The value sets that support this research come from diagnostics and maintenance reports from an active thermoelectric power plant. Mixed data processing was accomplished by means of logical combinatorial pattern recognition tools. Confusion of raw features set was obtained by employing different comparison criterion. Subsequently, testors and typical testors were identified and the informational weight of features in typical testors was also computed. The high importance of the mixed features that came from the expert knowledge was revealed by the obtained achievements.

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