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مدل پیش بینی خرابی تجهیزات مبتنی بر تحلیل منطقی داده ها

Failure Prognostics Model based on Logical Analysis of Data

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به همراه معرفی کوتاه دوره مهندسی صنایع در دانشگاه دالهاوزی

چکیده

Abstract. We will discuss an equipment failure prognostics model in order to predict the equipment's Mean Residual Life (MRL), using Logical Analysis of Data (LAD). LAD has the advantage of not relying on any statistical theory, which enables it to overcome the conventional problems concerning the statistical properties of the datasets. LAD's main advantage is its straightforward procedure and self-explanatory results.

In this work, the main objective is to develop methods to calculate equipment's survival probability at a certain future moment as well as its MRL, using LAD. We employ LAD's pattern generation procedure. Then, we introduce a guideline to employ the generated patterns to estimate the equipment's survival probability. The survival probability is then used to estimate the equipment's MRL. Analysis of performance of the proposed methods reveals that the methods provide comprehensible results that can be beneficial to maintenance practitioners. Prognostics results obtained by the proposed methods are compared with that of Proportional Hazards Model (PH-Model). The comparison reveals that the proposed methods are promising tools that compare favorably to the PH-Model.

Keywords: Condition Based Maintenance (CBM), Logical Analysis of Data (LAD), Equipment Prognostics, Condition Monitoring, Mean Residual Life (MRL).

خلاصه بیوگرافی

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