The influenced investigation of sample sizes to parameter estimation of reliability

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Abstract

Abstract—Fault diagnosis is a narrowing down procedure of identifying fault sources. It often is done largely depending on field knowledge and experience. To give a guidance of diagnosing, this paper presented a two-stage fault-diagnosis method by integrating fuzzy with Bayesian evaluations. Fault tree analysis (FTA) is introduced to draw fault sources of a system. Fault patterns of faults in diagnosing are constructed by analyzing system information flows of functional block diagrams. Fuzzy sets are used to determine the upper events of faults for considering the ambiguous characteristics of symptoms in initial conditions. A structured process of fuzzy possibility score conversion is reported to give the correlations between the causes and the symptoms. The bottom events of faults are then judged by Bayesian method in cooperation with a tree structure of faults. An injection molding machine (IMM) is introduced which is used as an example to depict the method of fault diagnosis.

Keyword：Fault diagnosis