Fault detection and isolation for complex system

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KEYWORDS

- Control theory
- Complex systems
- Artificial intelligence
- Error correction
- Sensors

ABSTRACT

Fault Detection and Isolation (FDI) is a method to monitor, identify, and pinpoint the type and location of system fault in a complex multiple input multiple output (MIMO) non-linear system. A two wheel robot is used as a complex system in this study. The aim of the research is to construct and design a Fault Detection and Isolation algorithm. The proposed method for the fault identification is using hybrid technique that combines Kalman filter and Artificial Neural Network (ANN). The Kalman filter is able to recognize the data from the sensors of the system and indicate the fault of the system in the sensor reading. Error prediction is based on the fault magnitude and the time occurrence of fault. Additionally, Artificial Neural Network (ANN) is another algorithm used to determine the type of fault and isolate the fault in the system.