

Knowledge-Based Expert System for Defect Identification and Rectification in Engine and Steering Control Systems of Fast Attack Crafts

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Cognitive systems deal with symbolic manipulations of knowledge, which are stored as rules, theories etc. State-of-the-art fault detection methods are equipment that are domain-specific and non-comprehensive. However, possessing domain knowledge and human reasoning can be applied for fault detection by having a thorough understanding of the associated system and its surroundings. This study introduces a complete semantic framework for Fault Detection and Diagnostics (FDD) in system simulation and control of an indigenously designed engine and steering control system for Fast Attack Crafts (FAC) by the Sri Lanka Navy. The suggested technique includes the construction of a knowledge base for FDD purposes using rules, and results in increased functionality of such systems using inference-based reasoning to extract information about operational anomalies. Hence, an Expert System (ES) has been designed as a solution for defect identification and rectification (DIDR) that are challenges affecting the indigenously designed Naval Propulsion and Steering Control (NPSC) System on-board FACs.

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