

Research on some inference algorithms and application to building a computer fault diagnosis support system

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Abstract: This study investigates several inference algorithms and their application in building a computer fault diagnosis support system. The research focuses on evaluating the effectiveness of rule-based reasoning, case-based reasoning, and fuzzy logic inference for identifying hardware and software failures. A hybrid inference model is proposed to combine the strengths of these approaches, addressing the limitations of uncertainty and incomplete fault data. The system architecture integrates a knowledge base of diagnostic rules with a case library of historical error patterns. Experimental results demonstrate that the proposed system achieves high accuracy in diagnosing common computer faults, significantly reducing troubleshooting time compared to traditional manual methods. The findings contribute to the field of intelligent diagnostic systems, offering a practical framework for developing automated technical support tools. This research provides a foundation for future work on adaptive learning mechanisms to enhance diagnostic precision over time.

Keywords: inference algorithms, fault diagnosis, computer error diagnosis, decision support system