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Incubating Minds,
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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
III YEAR - V SEMESTER
AGB1303 - AI PROBLEM SOLVING TECHNIQUES (TCPR)

AI-Based Medical Diagnosis Assistant Using Hybrid Rule-Based And Case-Based Reasoning

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ABSTRACT

In modern healthcare, accurate and timely diagnosis is essential for improving patient outcomes and supporting effective clinical decision-making. Traditional diagnostic approaches often rely heavily on doctor experience and manual symptom interpretation, which can be time-consuming, inconsistent, and prone to human error. To overcome these limitations, this project proposes an AI-based hybrid medical diagnosis assistant that integrates Rule-Based Reasoning (RBR), Case-Based Reasoning (CBR), and Naïve Bayes probabilistic inference for reliable disease prediction. The system analyzes user-entered symptoms, applies expert-defined medical rules, retrieves similar historical patient cases, and computes disease probability scores to handle uncertainty caused by overlapping symptoms. By combining knowledge-based and data-driven reasoning, the hybrid approach improves diagnostic accuracy and explainability compared to standalone methods. The proposed model serves as an effective decision support tool for doctors and healthcare institutions, helping reduce diagnostic delays, improve early disease detection, and enhance the overall efficiency and quality of modern healthcare systems. The modular and scalable design allows easy adaptation to new medical knowledge and future integration with hospital information systems. Experimental evaluation demonstrates improved performance in terms of accuracy, reliability, and diagnostic confidence.