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Improving Heart Attack Detection through Enhanced Machine Learning and Deep Neural Networks from Multi Model Images

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Abstract: *Accurate and timely detection of heart attacks is crucial for effective intervention and treatment. This paper presents a comprehensive study on enhancing heart attack detection using advanced machine learning (ML) and deep neural network (DNN) models, integrated through multi-model images. We propose an innovative approach that combines various machine learning techniques and deep learning architectures to improve prediction accuracy and robustness. Our methodology includes the integration of convolutional neural networks (CNNs) for feature extraction from medical imaging data, recurrent neural networks (RNNs) for analyzing time-series data, and ensemble methods for combining predictions. We systematically evaluate these models individually and in combination to determine their effectiveness in heart attack detection. Performance metrics such as accuracy, precision, recall, and F1-score are used to assess model efficacy, and comparative analyses are conducted to highlight improvements over traditional methods. The results demonstrate that the proposed multi-model approach significantly enhances prediction accuracy and reduces false positives and negatives, offering a more reliable tool for early heart attack detection. Our findings underscore the potential of integrating diverse ML and DNN techniques to address complex medical diagnosis challenges and pave the way for future research in predictive healthcare.*

Keywords: Deep Neural Networks, Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Predictive Analytics, Medical Imaging, Feature Extraction, Multi-Model Approach