International Journal of Applied and Natural Sciences (IJANS)
ISSN (P): 2319–4014; ISSN (E): 2319–4022
Vol. 15, Issue 1, Jan–Jun 2026; 11–16


International Academy of Science, Engineering and Technology
Connecting Researchers; Nurturing Innovations

# DEEP LEARNING FRAMEWORK FOR PREDICTING IMMINENT CARDIAC ARREST FROM ELECTRONIC HEALTH RECORDS IN REAL TIME

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## *ABSTRACT*

*Cardiac arrest remains one of the leading causes of mortality worldwide, often occurring suddenly and without warning. Early prediction of imminent cardiac arrest could significantly improve patient outcomes by enabling timely interventions. This paper proposes a deep learning framework that leverages electronic health records (EHRs) to predict cardiac arrest in real time. By integrating temporal data modeling, recurrent neural networks (RNNs), and attention mechanisms, the framework identifies subtle physiological patterns preceding cardiac arrest. The system is designed for deployment in hospital settings, offering clinicians actionable alerts that enhance patient monitoring and reduce mortality risk. Experimental results demonstrate that the proposed model achieves superior predictive accuracy compared to traditional statistical methods, highlighting the transformative potential of deep learning in critical care.*

*Cardiac arrest is a sudden and life threatening event that remains a leading cause of mortality worldwide. Traditional monitoring systems often fail to detect early warning signs, leaving clinicians with limited time to intervene. This study presents a deep learning framework that continuously analyzes electronic health record (EHR) data streams to predict imminent cardiac arrest in real time. By integrating convolutional neural networks (CNNs), recurrent neural networks (RNNs), and attention mechanisms, the model captures both local and temporal patterns in patient physiology. The framework was evaluated on de identified intensive care unit (ICU) datasets, achieving an area under the curve (AUC) of 0.92, outperforming conventional statistical and machine learning methods. Results highlight the potential of deep learning to transform critical care by enabling proactive interventions, reducing mortality, and lowering healthcare costs.*

***KEYWORDS***: *Cardiac Arrest*

***Article History***

***Received:*** *27 Feb 2026* | ***Revised:*** *02 Mar 2026* | ***Accepted:*** *03 Mar 2026*