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Co-authored by: Prof. Shalu Saraswat

at AICTE-sponsored International Conference on Emerging Technologies
and Circular Economy held on 26-27 May 2023 at ASM, Dwarka.

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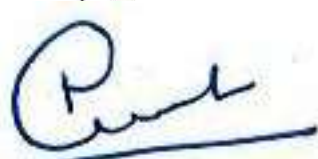
Framework for Detecting Malicious Activity in Vehicular Adhoc Network

at

2nd International Conference on Augmented Intelligence and Sustainable Systems

(ICAISS-2023) Organized by CARE College of Engineering, Trichy, India

on 23-25, August 2023


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Abstract

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- I. Introduction
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Patients with numerous cardiac conditions may pass away suddenly. Therefore, early arrhythmia diagnosis is crucial to preventing unexpected fatalities. It is necessary to... [View more](#)

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Abstract:

Patients with numerous cardiac conditions may pass away suddenly. Therefore, early arrhythmia diagnosis is crucial to preventing unexpected fatalities. It is necessary to develop techniques for extracting ECG signal characteristics to diagnose cardiac irregularities and other illnesses. This paper demonstrates the kernel-PCA and supports the vector regression-based arrhythmia detection method. The T, S, Q, R, P beats, and RR intervals with a certain amplitude are among the features of an ECG signal. Several techniques have been put forth to identify and evaluate ECG signals. This study combines kernel-PCA with a support vector regression classifier to detect the ECG signal. The process has three phases: initially, a low-pass filter reduces noise from the ECG data. Later, for feature extraction of the ECG signal, higherorder statistics and Kernel-PCA are produced. The ECG wave is finally classified using the resulting feature set as input to the SVR classifier. Most of the information used to assess the classification performance comes from the online MIT-BIH dataset where ECG recordings were obtained. The suggested model has better classification in categorization performance when compared to several traditional machine learning classifiers.

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 Contents**I. Introduction**

The use of scientific and medical equipment for automated diagnosis of health issues has significantly increased in recent years. For detecting health disorders like arrhythmia or other cardiac-related problems, the electrocardiogram (ECG) is crucial. ECGs are used to swiftly and correctly analyse and diagnose cardiac problems. The ECG receives the patient's electrical impulses and gathers data on the arrhythmia signals. When an arrhythmia problem or genetic abnormality is present, the ECG signal's shape changes, yet every beat on the EKG includes information that will be useful to the doctor after a thorough diagnosis has been made.

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Detection of Arrhythmia using Ensemble classifier in Comparison with Support Vector Machine Classifier to Measure the Accuracy, Sensitivity, Specificity and Precision

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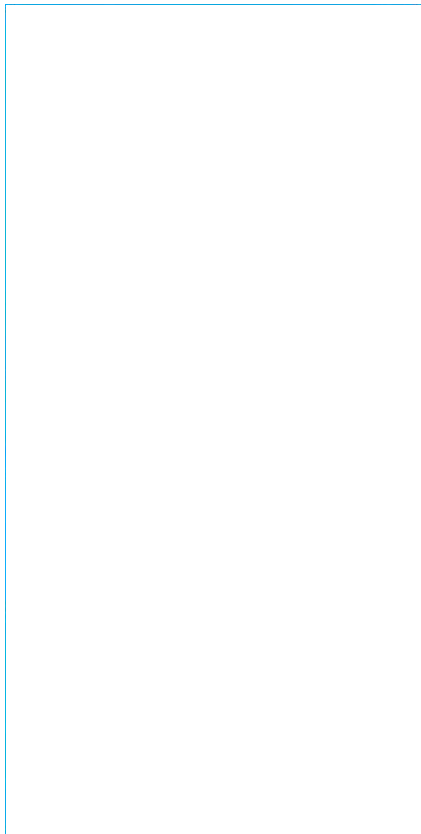
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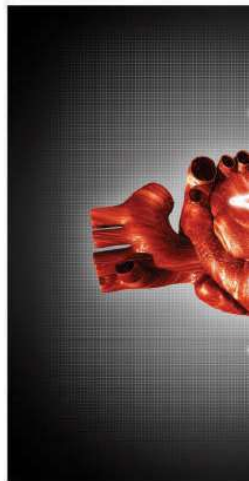
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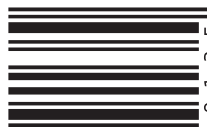
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This book explains how a deep generative adversarial network built on a large dataset may detect arrhythmias more accurately than physicians. Furthermore, feature extraction has traditionally been seen as an essential component of electrocardiogram arrhythmia classification. The purpose of this research is to examine ECG arrhythmia classification using a deep dense generative adversarial network. The GAN architecture shown in this book can be taught to produce ECG signals that are comparable to real-world ECG signals. The results indicate that using a sequence-based strategy for all ECG-beat types substantially improves area under curve on our test set. Traditional architecture does not naturally address this structure, and therefore suffers from decreased performance when such a structure is informative. This book compares the proposed technique to kernel principle component analysis with incremental support vector regression, discrete wavelet transforms with incremental support vector regression and general sparse neural network. From obtained results, it is concluded that the proposed GAN technique is superior to these three methods with an overall accuracy of 97.44 percent.



Dr. Sanjay is presently working as an Associate Professor in PDEAs College of Engineering Manjari Pune, Maharashtra, India. He has a total of 21 years of experience in Academics and Research. His books "Sewage Treatment using PLC" and "Arrhythmia Analysis and Interpretations ECG Signals" were published by Lambert Academic Publishing.

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Arrhythmia Detection by using Generative Adversarial Network Method

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