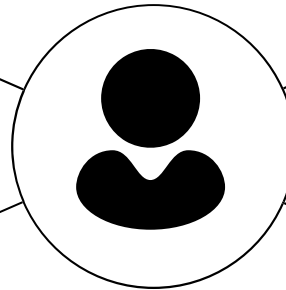


What do they THINK AND FEEL?

what really counts
major preoccupations
worries & aspirations



What do they SAY AND DO?

attitude in public
appearance
behavior towards others

The electrocardiogram (ECG) is one of the most extensively employed signals used in the diagnosis and prediction of cardiovascular diseases.

Cardiovascular diseases (CVDs) are the leading cause of human death, with over 17 million people known to lose their lives annually due to CVDs.

electrocardiogram (ECG) recordings are widely used for diagnosing and predicting cardiac arrhythmia for diagnosing heart diseases.

The ECG signals can capture the heart's rhythmic irregularities, commonly known as arrhythmias. A careful study of ECG signals is crucial for precise diagnosis of patients' acute and chronic heart condition.

There are methods reported that use 2-D ECG signals; however, in the best of our knowledge, there are not clear results on how the 1-D ECG signal is converted to 2-D images for using 2-D CNN models.

Machine learning is a subset of artificial intelligence used with highest diagnostic tools for the prediction and diagnosis of different types of illnesses.

one-dimensional ECG time series signals are transformed into 2-D spectrograms through short-time Fourier transform.

The classification of electrocardiogram (ECG) signals is very important for the automatic diagnosis of heart disease.

Aim of this research was to design a new deep learning method for effectively classifying arrhythmias by using 2-second segments of 2-D spectrograms and images of ECG signals.

Arrhythmia is irregular changes of normal heart rhythm and effective manual identifying of them require a lot of time and depends on experience of clinicians.

An automatic system that can identify different abnormal heartbeats from a large amount of ECG data should be developed for use in the healthcare field.

Electrocardiogram (ECG) signals play a vital role in diagnosing and monitoring patients suffering from various cardiovascular diseases (CVDs).

PAIN

fears
frustrations
obstacles

Deep CNN has proven useful in enhancing the accuracy of diagnosis algorithms in the fusion of medicine and modern machine learning technologies.

results indicate that the prediction and classification of arrhythmias with 2-D ECG representations, spectrograms and the CNN model is a reliable operative technique in the diagnosis of CVDs.

2-D CNN-based classification model for automatic classification of cardiac arrhythmias using ECG signals.

GAIN

"wants" / needs
measures of success
obstacles

An detailed performance comparison between the proposed 2-D CNN model and other CNN models (including VGGNet and ResNet) is presented using confusion matrices for all eight classes.

The average accuracy of these three models is presented by averaging the diagonal values.

The existing neural networks with the feed-forward process for the automatic classification of the 2-D image weren't feasible since these methods do not take into account the local spatial information.

What do they HEAR?

what friends say
what boss say
what influencers say

What do they SEE?

environment
friends
what the market offers