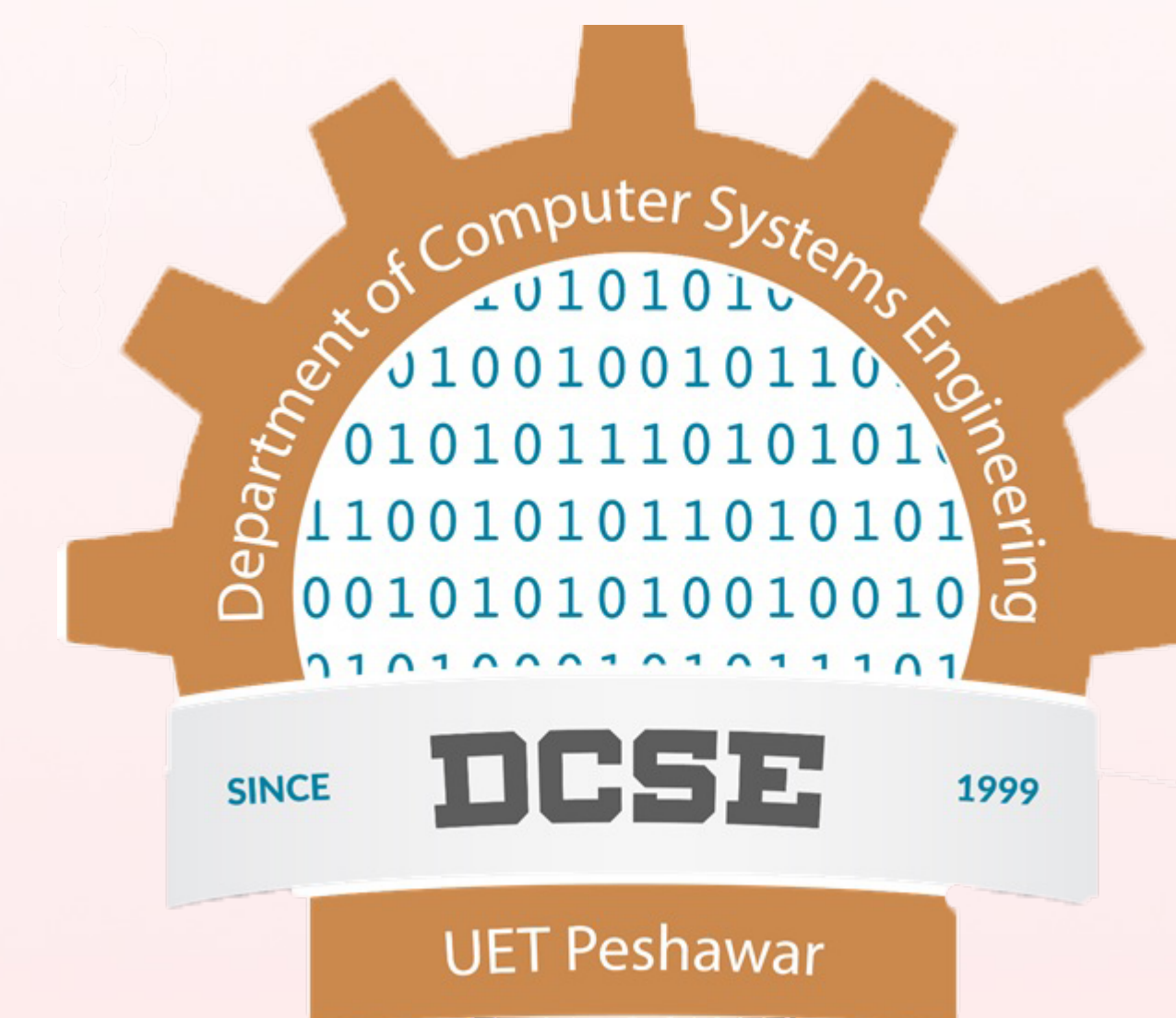


Machine Learning Based Detection of Cardiovascular Diseases

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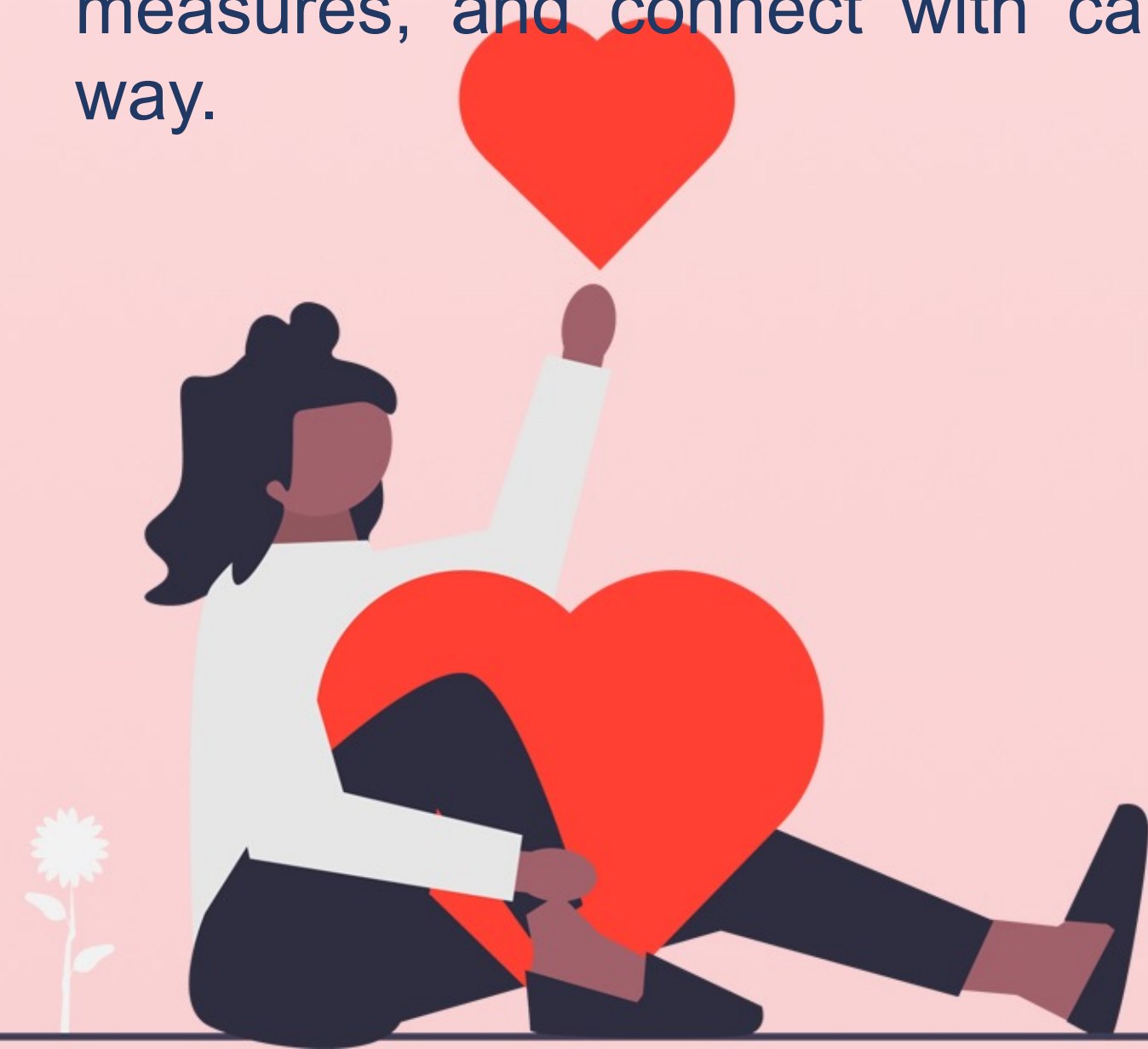


Introduction

- ♥ Heart Diseases are the leading cause of deaths worldwide, they account for 32% of all global deaths and they are the leading cause of deaths in Pakistan.
- ♥ Middle-income countries like Pakistan suffer from cardiovascular diseases because minimal attention is given to the detection, prevention, and precaution of the risk factors of cardiovascular diseases.
- ♥ About 68% of Doctors and Practitioners misdiagnose Heart Diseases. Misdiagnoses often occur because of errors in equipment and machinery.

Motivation

- ♥ This project aims to create a Machine-learning-based application that can successfully recognize ECGs for the prevalence of CVDs diseases in the patient. The goal is to help people in middle-income and low-income countries successfully detect the potential of CVDs, take precautionary measures, and connect with cardiologists in a cost-effective way.



Proposed Methodology

- ♥ We aim to use a less computationally expensive method to predict and classify CVDs. Our Model will extract features from an ECG signal and classify various types of Heart beats (Normal, Ventricular Fibrillation, Atrial Fibrillation, Right Bundle Branch Block, Left Bundle Branch Block)
- ♥ We have deployed a Machine Learning Model to a Web App to accurately detect patient ECG signals for the prevalence of CVDs.
- ♥ Our Web App will help patients with taking preventive measures and connecting with the right help.

Operating Procedure

- ♥ Open the Web App, and click 'Get Connected.' You'll be redirected to the Patient Portal.
- ♥ To Connect with a Cardiologist, click "Connect." You'll be redirected to all the cardiologists near you.
- ♥ To check your ECG results, click "Scan." You'll be redirected to the machine learning model. Add the .CSV file of your ECG signal and click scan.
- ♥ To take preventive measures and learn about a healthier lifestyle click "Take the first step." You'll be redirected to blogs about taking the necessary precautions.

Results

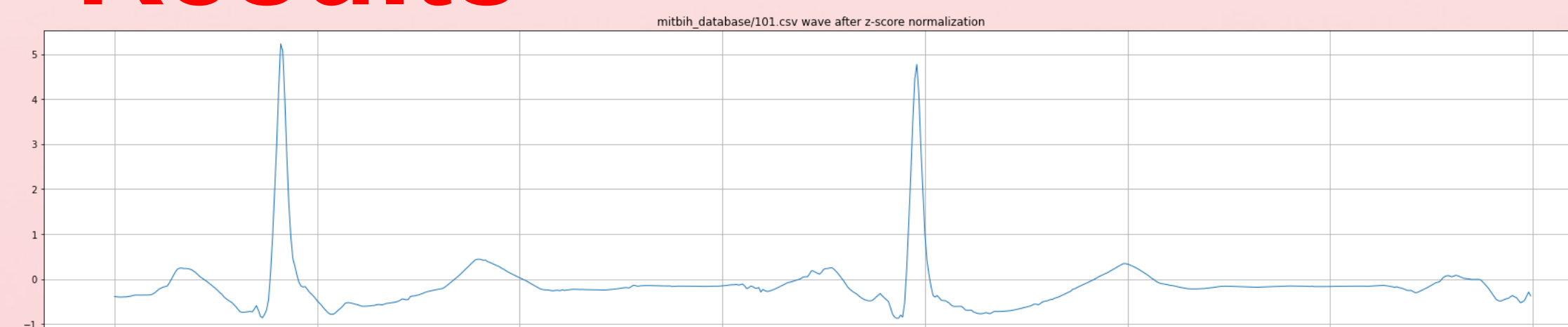


Figure 1: Denoised Signal

157/157 [=====] - 2s 16ms/step - loss: 0.0492 - accuracy: 0.9918 0s - los
Test Loss: 0.04919091612100601
Test accuracy: 0.9918000102043152

Figure 2: Accuracy Results

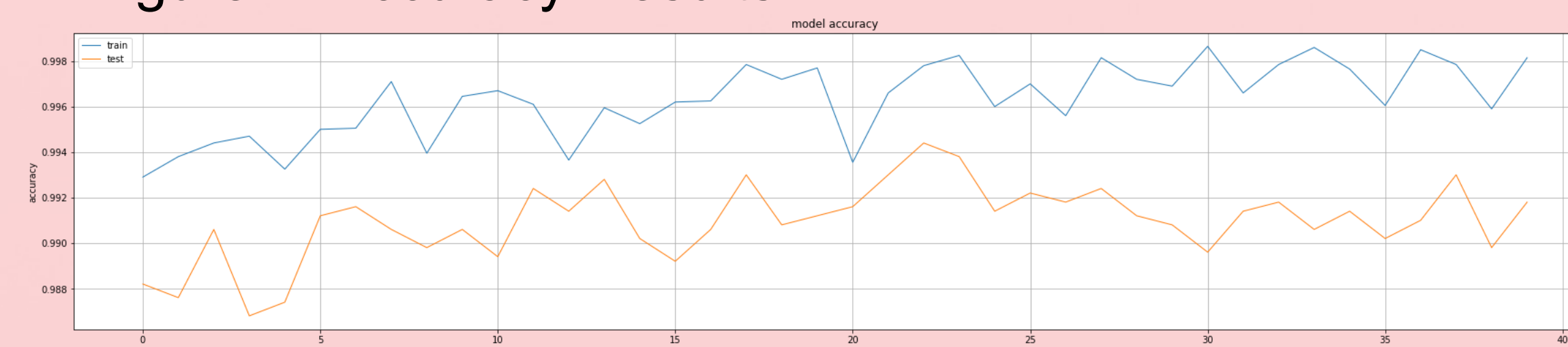


Figure 3: Model Accuracy

