

## Introduction

Heart arrhythmia is an irregular heartbeat and occurs when the electrical signals that regulate heartbeat don't function properly. This irregularity may cause the heart to beat too fast (tachycardia), too slow (bradycardia) or irregular. In general, Arrhythmias are categorized by rate, mechanism and/or duration.

Atrial fibrillation (A-fib) is the most common type of arrhythmia and affect more than 33 million people worldwide. A-fib can lead to blood clot, and increases the risk of stroke, heart failures and other heart related complications. Atrial fibrillation may cause a fast, pounding heartbeat, shortness of breath or weakness. A-fib is a serious medical condition that requires proper treatment to prevent stroke.

This project is to build a machine learning model to detect A-fib on patients to allow them get appropriate medical attention as soon as possible.

## Electrocardiography (ECG)

ECG is the process of recording the heart's electrical activity. ECG is critical non-invasive diagnostic tool for assessing the cardiac clinical status of the patients. In 12-lead ECG ten electrodes are placed on the patient's limbs and on the surface of the chest. This configuration allows for the magnitude of the heart electric potential to be measured from twelve different angles (leads). ECG is typically used by electro-cardiologist to diagnose to arrhythmia, including A-fib.

In this project ECG data combine with patient information will be used in developing the ML models.

### Data Source

[coortegsrafva.csv](#) : This is a subset of the PTB-XL, publicly available ECG data found on Kaggle. This dataset includes patient information and arrhythmia status. The dataset is the recording of 6528 patients

[ecgeq-500hzsrfava.npy](#): This numpy file is the 12-lead ECG for all 6528 patients.