

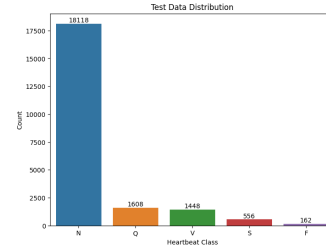
ECG Classification

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This dataset contains two collection of heart-beat signals derived from two famous datasets in heartbeat classification, the MIT-BIH Arrhythmia Dataset and The PTB Diagnostic ECG Database.

This dataset has been used in exploring heartbeat classification using deep neural network architectures, and observing some of the capabilities of transfer learning on it. There are 5 types of categories including N': 0, 'S': 1, 'V': 2, 'F': 3, 'Q': 4



Before going to the LSTM i have divided the dataset to:

New Training set size: 87554

Validation set size: 10946

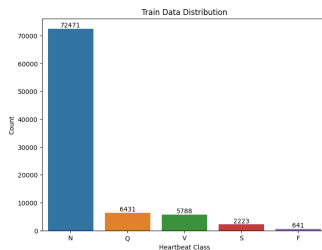
Test set size: 10946

1 Introduction

This dataset contain of 14552 samples and have been divided into 2 categories. All of this dataset are in CSV files. Each of these CSV files contain a matrix, with each row representing an example in that portion of the dataset. The final element of each row denotes the class to which that example belongs.

2 Preprocessing

This is the distribution of the train dataset.



This is the distribution of the test dataset.

3 LSTM (Long Short Term Memory)

I use the LSTM model to classify the dataset and here is my result after training 20 epochs:

LSTM Test Loss: 0.2155

LSTM Test Accuracy: 0.9441

This is my LSTM Classification Report:

Table 1: LSTM Classification Report

Class	Precision	Recall	F1-score	Support
0.0	0.95	0.99	0.97	9059
1.0	0.87	0.12	0.21	278
2.0	0.84	0.83	0.84	724
3.0	0.00	0.00	0.00	81
4.0	0.98	0.89	0.93	804
Accuracy	0.94 (10946 samples)			
Macro Avg	0.73	0.57	0.59	10946
Weighted Avg	0.94	0.94	0.93	10946