**1. Pre-processing**

The pre-processing part involves multiple steps, starting from

**1. Data Acquisition:**

In the data acquisition step we use the wfdb library of matlab to read through the databases and return the data and annotation arrays.

**2. Feature Extraction:**

Next, we use the available pantompkins function to extract all the available features using just the ecg data files.

**3. Annotation of Features:**

Using the annotations array. The respective features are divided into arrays based on the annotated arrhythmia. (Matlab classes were used to store the peaks with respect to the arrhythmia)

**4. Calculation of RR and QS intervals:**

After receiving all the required peaks from the data the respective RR and QS intervals are calculated for each arrhythmia.

**2. Data Set Division:**

After receiving the 2 arrays X\_all and Y\_all containing all the available data, the data is then divided into training and testing data. By random selection keeping a ratio of 80:20 between the training and testing.

**3. SVM Model Training:**

The data is then fed to the matlab library function fitcsvm with the kernel set to linear. I am using a **parfor** loop in matlab which allows multiple processors to execute the training of each model of LSVM classifier. To utilise the GPU the training arrays are to be stored as GPU arrays and then fed to the trainer.

**Design Diagram:**

The design diagram elaborates on what the flow of our model is and what types of arrhythmias are we predicting. Each individual arrhythmia class has its corresponding share of all the 6 features for training.

