Assignment 6 : 5ML

Roll no:163054001

Number of samples in your training data set: 432

Total time of the training data set: appx 10-15 mins

Size of the window in time: 2 sec

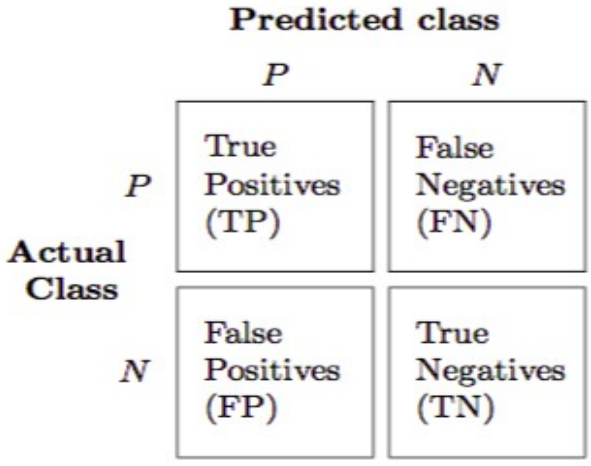
Features selected: 6 features (accelx, accely, accelz,linearacclerationx ,linearaccleration y, linearacclerationz) . 3 values (accelx, accely, accelz) were used as recieved from accerelometer and linear acceleration is calculated using following method: This gave better accuracy and precision.

```
final float alpha = 0.8f;
//gravity is calculated here
gravity[0] = alpha * gravity[0] + (1 - alpha) * x;
gravity[1] = alpha * gravity[1] + (1 - alpha)* y;
gravity[2] = alpha * gravity[2] + (1 - alpha) * z;
//acceleration retrieved from the event and the gravity is removed
linear_acceleration[0] = x - gravity[0];
linear_acceleration[1] = y - gravity[1];
linear_acceleration[2] = z - gravity[2];
```

Parameters of the learned model:

```
svm_type c_svc
kernel_type rbf
gamma 0.166667
nr_class 2
total_sv 226
rho -0.976288
label 1 -1
nr_sv 190 36
SV
```

Number of samples in your evaluation data set: 160
Total time of the training data set: 5-6 mins
Confusion matrix:



	Taking 6 features (accelx, accely, accelz, linearacclerationx ,linearacclerationy, linearacclerationz)	Taking 3 features (accelx, accely, accelz)
Confusion Matrix	[[77 10] [15 58]]	[[77 10] [17 56]]
Accuracy	0.84375	0.83125000000000004
Precision	0.84494884910485935	0.83381689232753065
Recall	0.83978900960478664	0.82609037946780028
F-score	0.84151511549585956	0.82829206248261056