

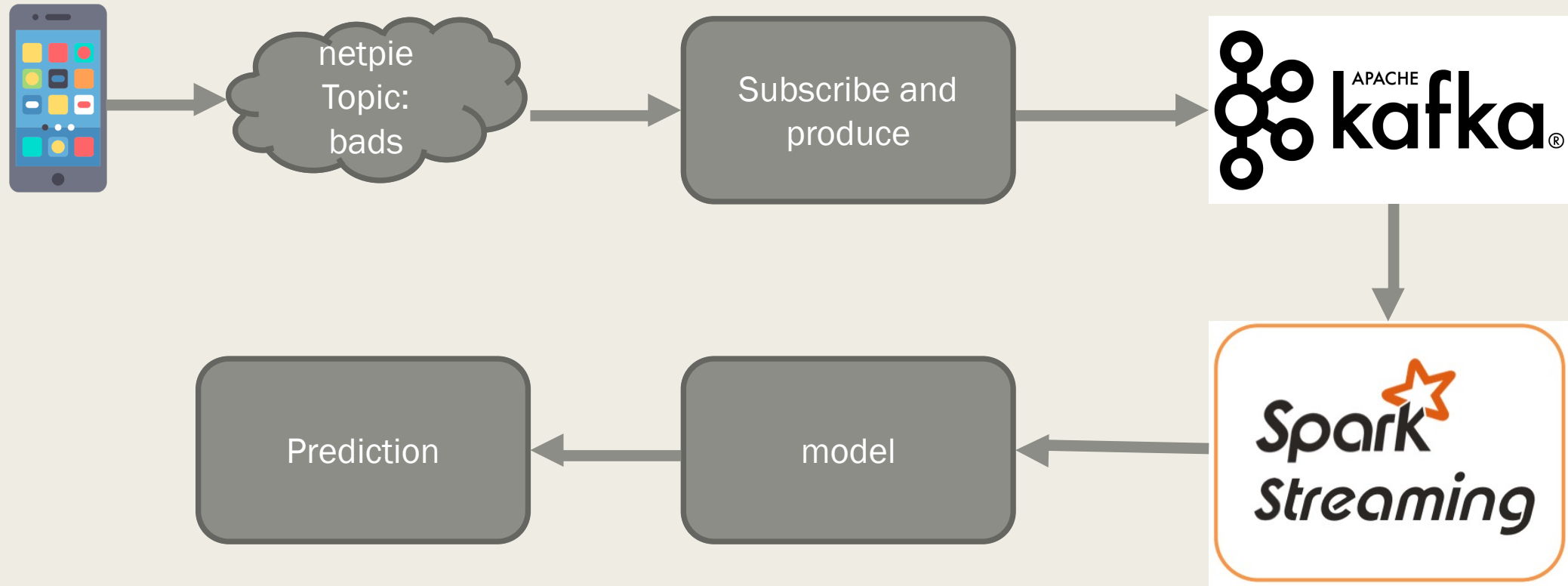


ACTIVITY RECOGNITION

Nothing's gonna stop us now

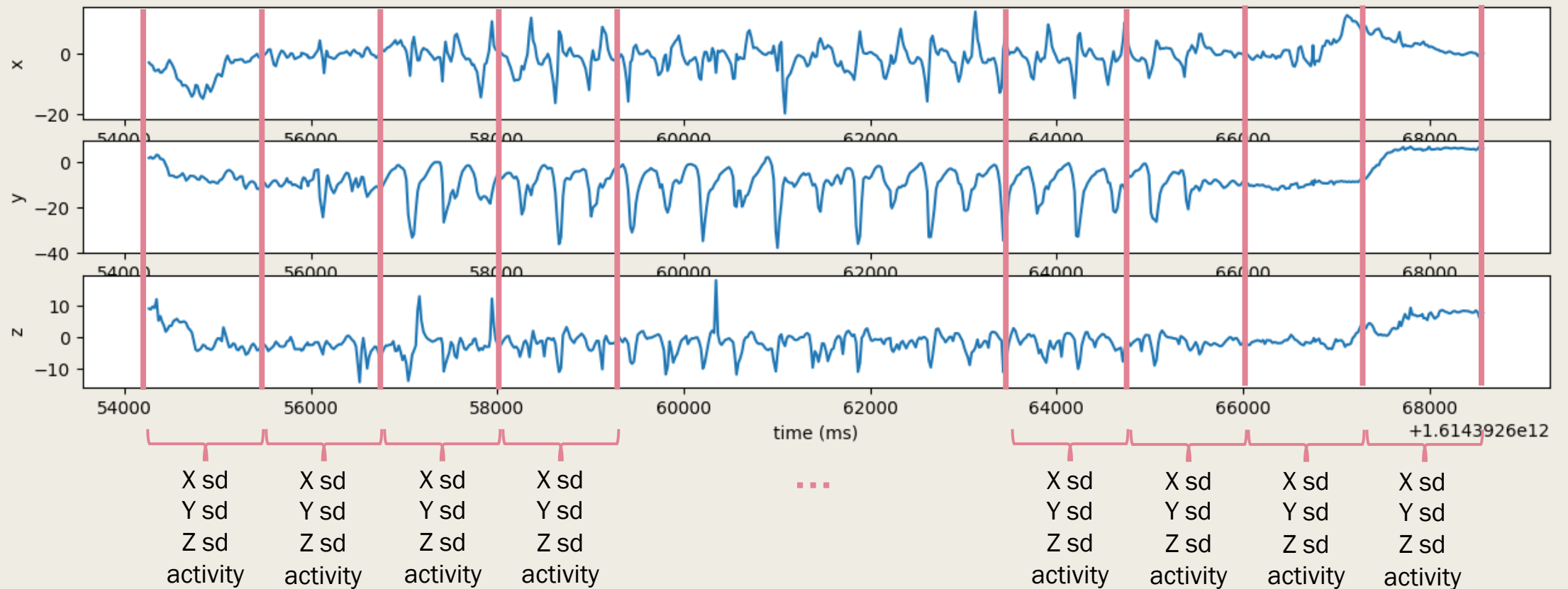


Diagram



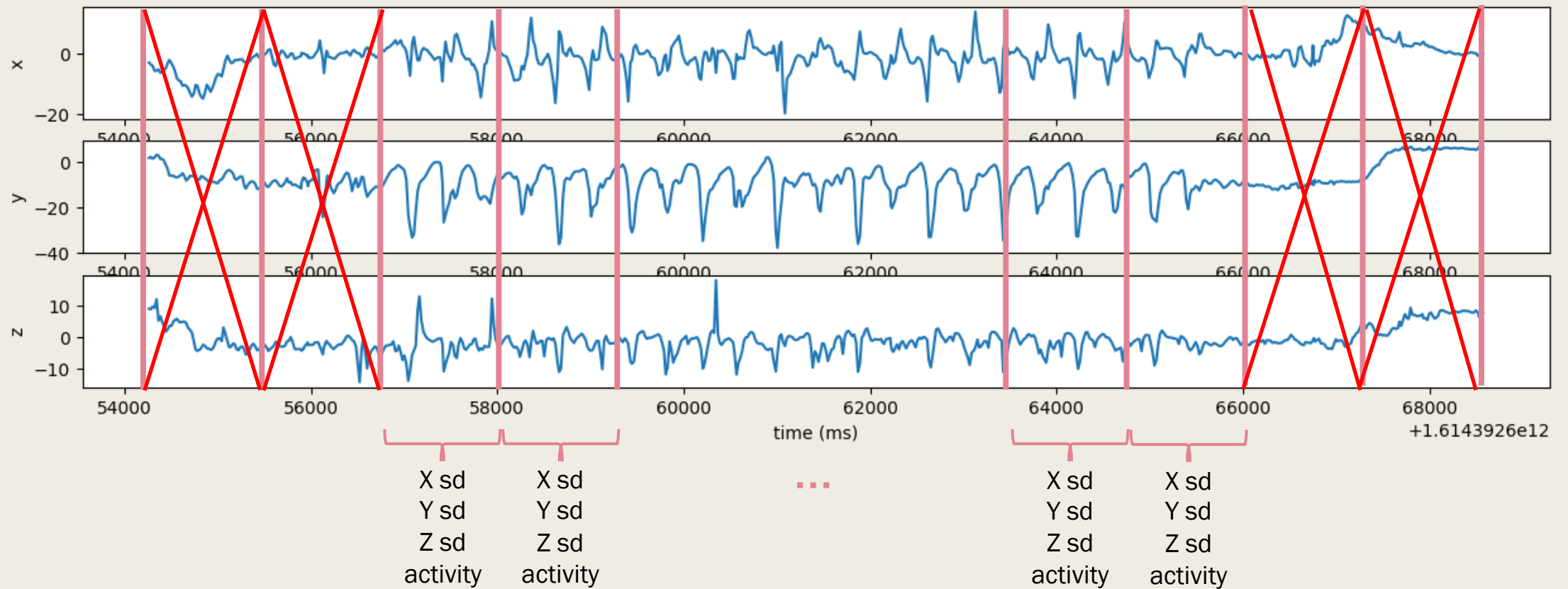
Training Data

- Compute standard deviation (SD) of X, Y, Z every 15 row



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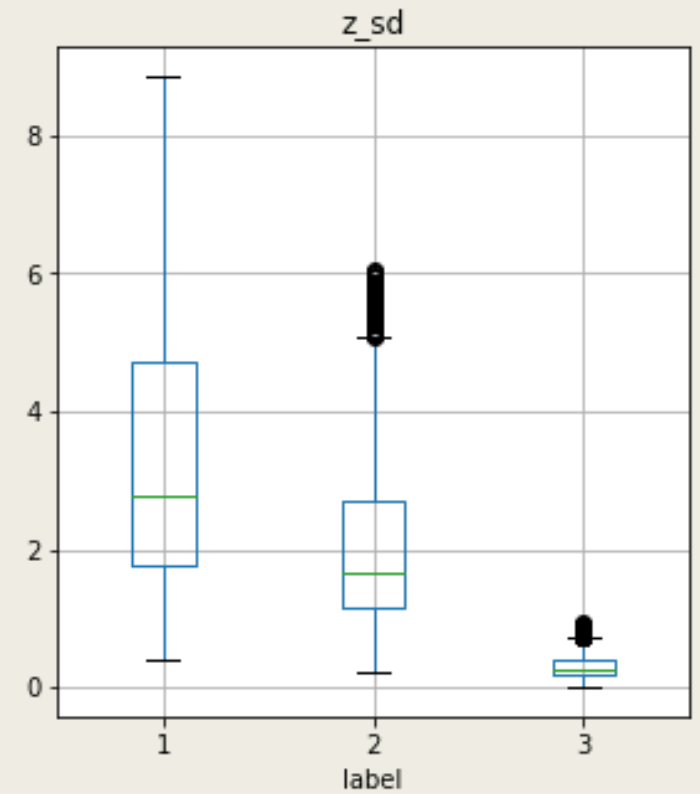
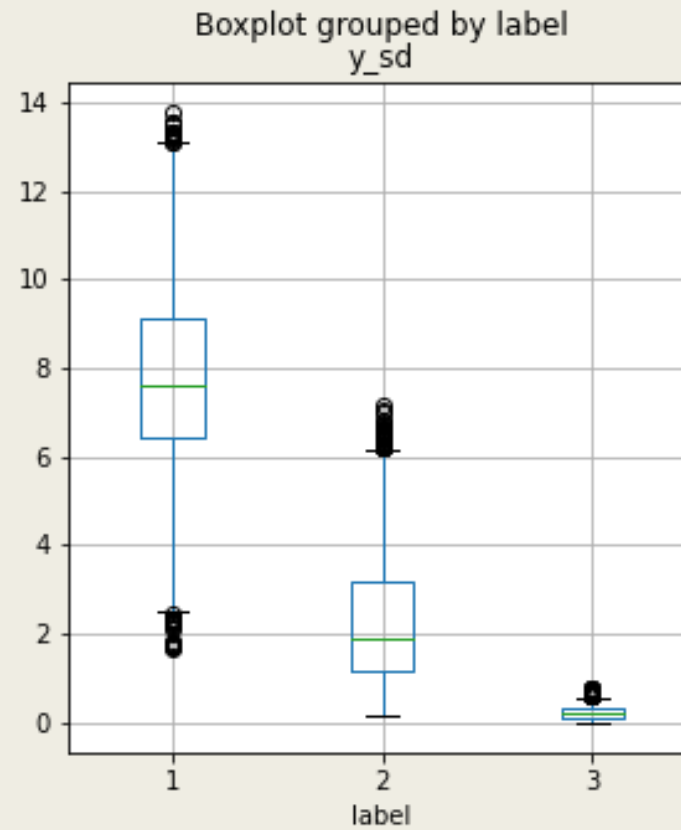
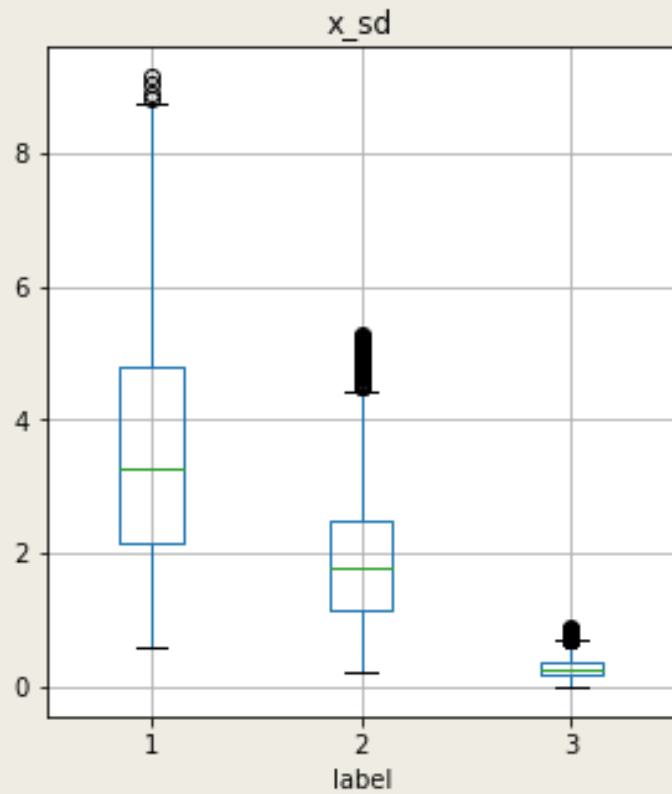


Training Model

- Features:
 - *sd x, sd y, sd z*
- Label:
 - *activity (stand, walk, run)*
- Number of data: 9923 rows
 - *walk 3926 rows*
 - *run 3786 rows*
 - *stand 2211 rows*
- Train model by PySpark

Boxplot

1 run
2 walk
3 stand



Model Evaluation

		decision tree	random forest	logistic regression
walk	precision	0.893	0.899	0.972
	recall	0.962	0.960	0.913
	F1	0.926	0.929	0.941
run	precision	0.973	0.972	0.958
	recall	0.906	0.913	0.944
	F1	0.939	0.941	0.951
stand	precision	0.981	0.981	0.975
	recall	0.975	0.975	0.990
	F1	0.978	0.978	0.982

Real Time Analytics

Windows time 5 sec

```
b'2021-04-18 14:14:37,-0.9784439,3.6973748,8.972964'  
b'2021-04-18 14:14:37,-0.9511512,3.6681664,8.970091'  
b'2021-04-18 14:14:37,-0.9573758,3.560432,9.095543'  
b'2021-04-18 14:14:37,-0.9640792,3.6427891,9.031859'  
b'2021-04-18 14:14:38,-0.9573758,3.6609845,9.008398'  
b'2021-04-18 14:14:38,-0.9597699,3.6121445,9.043831'  
b'2021-04-18 14:14:38,-0.9363077,3.592992,9.049097'  
b'2021-04-18 14:14:38,-0.9363077,3.5829365,9.061546'  
b'2021-04-18 14:14:38,-0.9492359,3.6068776,9.043831'  
b'2021-04-18 14:14:39,-0.9659945,3.6135812,9.034732'  
b'2021-04-18 14:14:39,-0.9655158,3.6198056,9.031859'  
b'2021-04-18 14:14:39,-0.9798803,3.6327338,9.035211'  
b'2021-04-18 14:14:39,-0.9947238,3.6566749,9.001215'  
b'2021-04-18 14:14:39,-0.9923296,3.6437466,9.032339'  
b'2021-04-18 14:14:40,-0.9798804,3.645183,9.024676'
```

sd x

sd y

sd z



model

```
2021-04-19 16:01:08, stand  
2021-04-19 16:01:13, stand  
2021-04-19 16:01:18, stand  
2021-04-19 16:01:23, stand  
2021-04-19 16:01:28, stand
```

