Nam Phan
Andrew Wang
Ze He
Project 2A

Features:

SpeedDev, XDev, XvelocityChange, ZDev, ZDistance

5 x 1 feature

SpeedDev
Decision Tree

Accuracy	94.8569218870843%

Other Metrics				
TP Rate	**FP Rate**	**Precision**	**Recall**	
0.9169719169719169	0.036785512167511556	0.9203431372549019	0.9169719169719169	WALK
0.9632144878324844	0.08302808302808302	0.9615819209039548	0.9632144878324844	STATIONARY

Confusion Matrix			
Classified As	a	b	
	751.0	68.0	a = WALK
	65.0	1702.0	b = STATIONARY

XDev
Decision Tree

Accuracy	88.16705336426914%

Other Metrics				
TP Rate	**FP Rate**	**Precision**	**Recall**	
0.8473748473748474	0.10243350311262026	0.7931428571428571	0.8473748473748474	WALK
0.8975664968873798	0.15262515262515264	0.9269433080070134	0.8975664968873798	STATIONARY

Confusion Matrix			
Classified As	a	b	
	694.0	125.0	a = WALK
	181.0	1586.0	b = STATIONARY

XvelocityChange
Decision Tree

	Accuracy	72.42846094354215%

Other Metrics

TP Rate	FP Rate	Precision	Recall	
0.3028083028083028	0.08036219581211092	0.6358974358974359	0.3028083028083028	WALK
0.9196378041878891	0.6971916971916972	0.7399817850637522	0.9196378041878891	STATIONARY

Confusion Matrix

Classified As	a	b	
	248.0	571.0	a = WALK
	142.0	1625.0	b = STATIONARY

ZDev
Decision Tree

	Accuracy	93.19412219644238%

Other Metrics

TP Rate	FP Rate	Precision	Recall	
0.9242979242979243	0.06451612903225806	0.8691159586681975	0.9242979242979243	WALK
0.9354838709677419	0.0757020757020757	0.9638483965014577	0.9354838709677419	STATIONARY

Confusion Matrix

Classified As	a	b	
	757.0	62.0	a = WALK
	114.0	1653.0	b = STATIONARY

ZDistance
Decision Tree

	Accuracy	72.46713070378964%

Other Metrics

TP Rate	FP Rate	Precision	Recall	
0.2564102564102564	0.058290888511601587	0.670926517571885	0.2564102564102564	WALK
0.9417091114883984	0.7435897435897436	0.732072151341839	0.9417091114883984	STATIONARY

Confusion Matrix

Classified As	a	b	
	210.0	609.0	a = WALK
	103.0	1664.0	b = STATIONARY

3 x 2 features

SpeedDev + XDev
Decision Tree
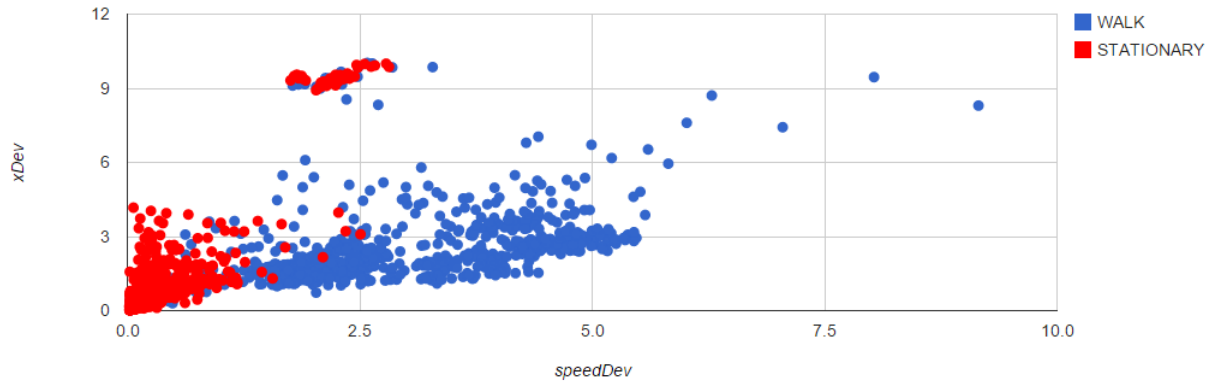
Accuracy	95.70765661252901%

Other Metrics				
TP Rate	**FP Rate**	**Precision**	**Recall**	
0.9084249084249084	0.02037351443123939	0.9538461538461539	0.9084249084249084	WALK
0.9796264855687606	0.09157509157509157	0.9584717607973422	0.9796264855687606	STATIONARY

Confusion Matrix			
Classified As	a	b	
	744.0	75.0	a = WALK
	36.0	1731.0	b = STATIONARY

Xvelocity change + SpeedDev
Decision Tree
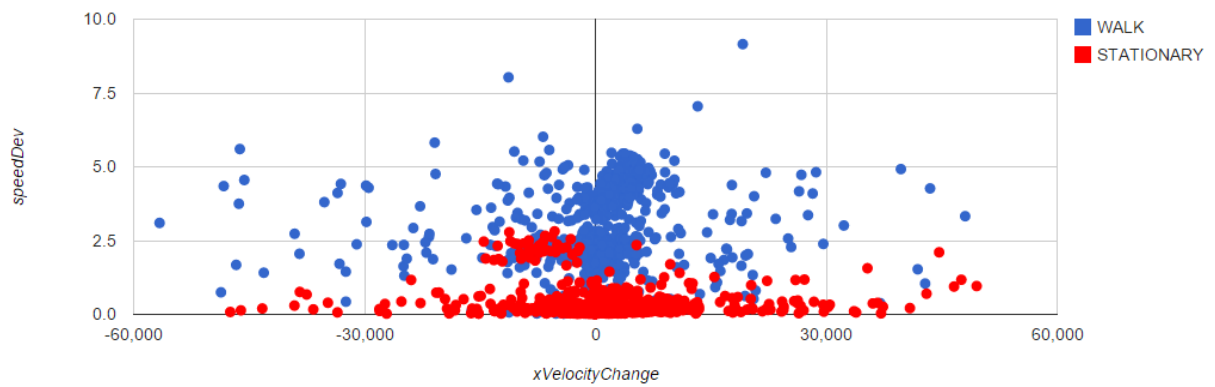
Accuracy	94.70224284609435%

Other Metrics				
TP Rate	**FP Rate**	**Precision**	**Recall**	
0.9133089133089133	0.03735144312393888	0.918918918918919	0.9133089133089133	WALK
0.9626485568760611	0.08669108669108669	0.9599322799097065	0.9626485568760611	STATIONARY

Confusion Matrix			
Classified As	a	b	
	748.0	71.0	a = WALK
	66.0	1701.0	b = STATIONARY

ZDistance + ZDev
Decision Tree
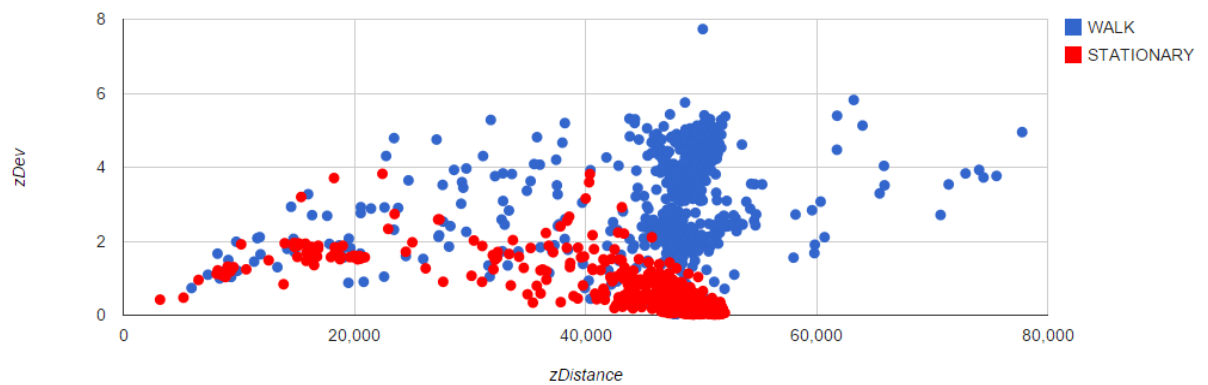
Accuracy	94.3155452436195%

Other Metrics				
TP Rate	FP Rate	Precision	Recall	
0.8608058608058609	0.01867572156196944	0.9552845528455285	0.8608058608058609	WALK
0.9813242784380306	0.1391941391941392	0.9383116883116883	0.9813242784380306	STATIONARY

Confusion Matrix			
Classified As	a	b	
	705.0	114.0	a = WALK
	33.0	1734.0	b = STATIONARY

1 x 5 features

Decision Tree

Accuracy	95.86233565351895%

Other Metrics				
TP Rate	FP Rate	Precision	Recall	
0.9145299145299145	0.020939445387662705	0.9529262086513995	0.9145299145299145	WALK
0.9790605546123373	0.08547008547008547	0.9611111111111111	0.9790605546123373	STATIONARY

Confusion Matrix			
Classified As	a	b	
	749.0	70.0	a = WALK
	37.0	1730.0	b = STATIONARY

Part B
Classifier: LogiBoost
Confusion Matrix:

```
=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances         224                  91.0569 %
Incorrectly Classified Instances        22                   8.9431 %
Kappa statistic                          0.8625
Total Cost                              22
Average Cost                             0.0894
K&B Relative Info Score              20439.8974 %
K&B Information Score                   318.4196 bits        1.2944 bits/instance
Class complexity | order 0             382.6004 bits        1.5553 bits/instance
Class complexity | scheme               80.7774 bits        0.3284 bits/instance
Complexity improvement     (Sf)        301.823  bits        1.2269 bits/instance
Mean absolute error                      0.0866
Root mean squared error                  0.2056
Relative absolute error                 19.8571 %
Root relative squared error             44.035  %
Total Number of Instances              246

=== Detailed Accuracy By Class ===

                TP Rate   FP Rate   Precision   Recall   F-Measure   ROC Area   Class
                0.978     0.072     0.892       0.978    0.933       0.988      walking
                0.926     0.026     0.956       0.926    0.941       0.993      stationary
                0.78      0.037     0.868       0.78     0.821       0.968      driving
Weighted Avg.   0.911     0.046     0.911       0.911    0.909       0.985

=== Confusion Matrix ===

  a  b  c   <-- classified as
 91  0  2 |  a = walking
  2 87  5 |  b = stationary
  9  4 46 |  c = driving
```