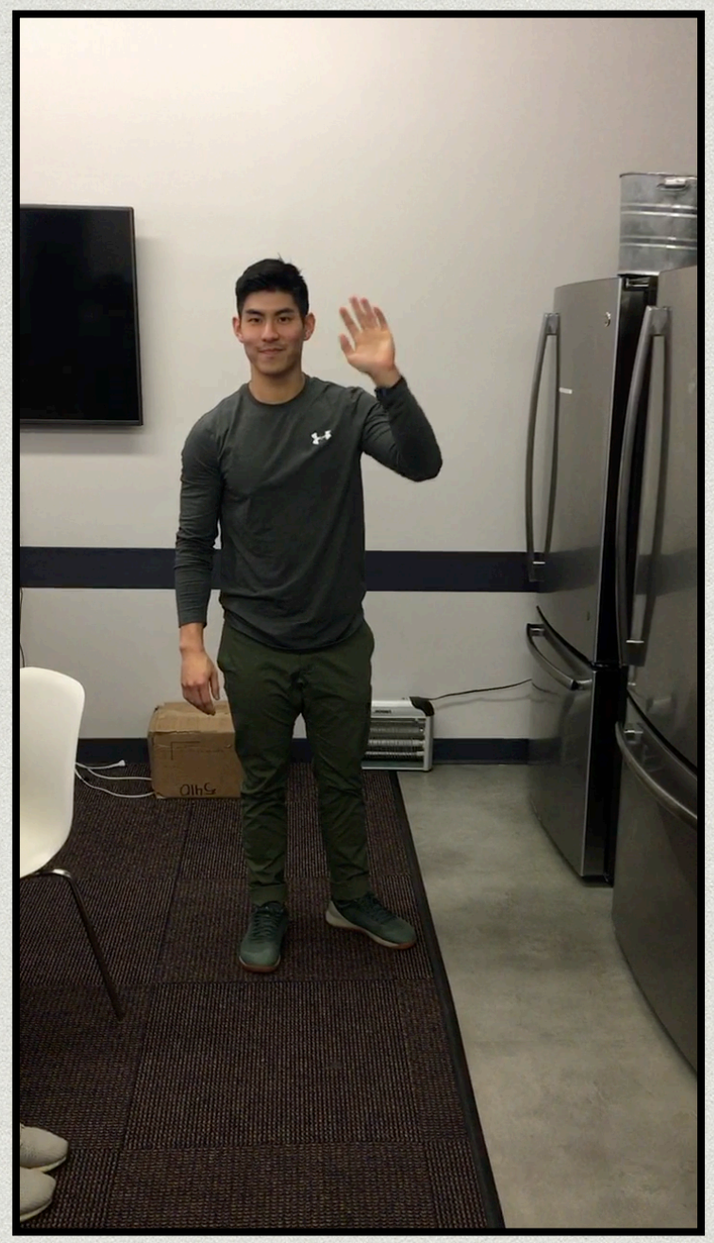
BURPEE NOT BURPEE

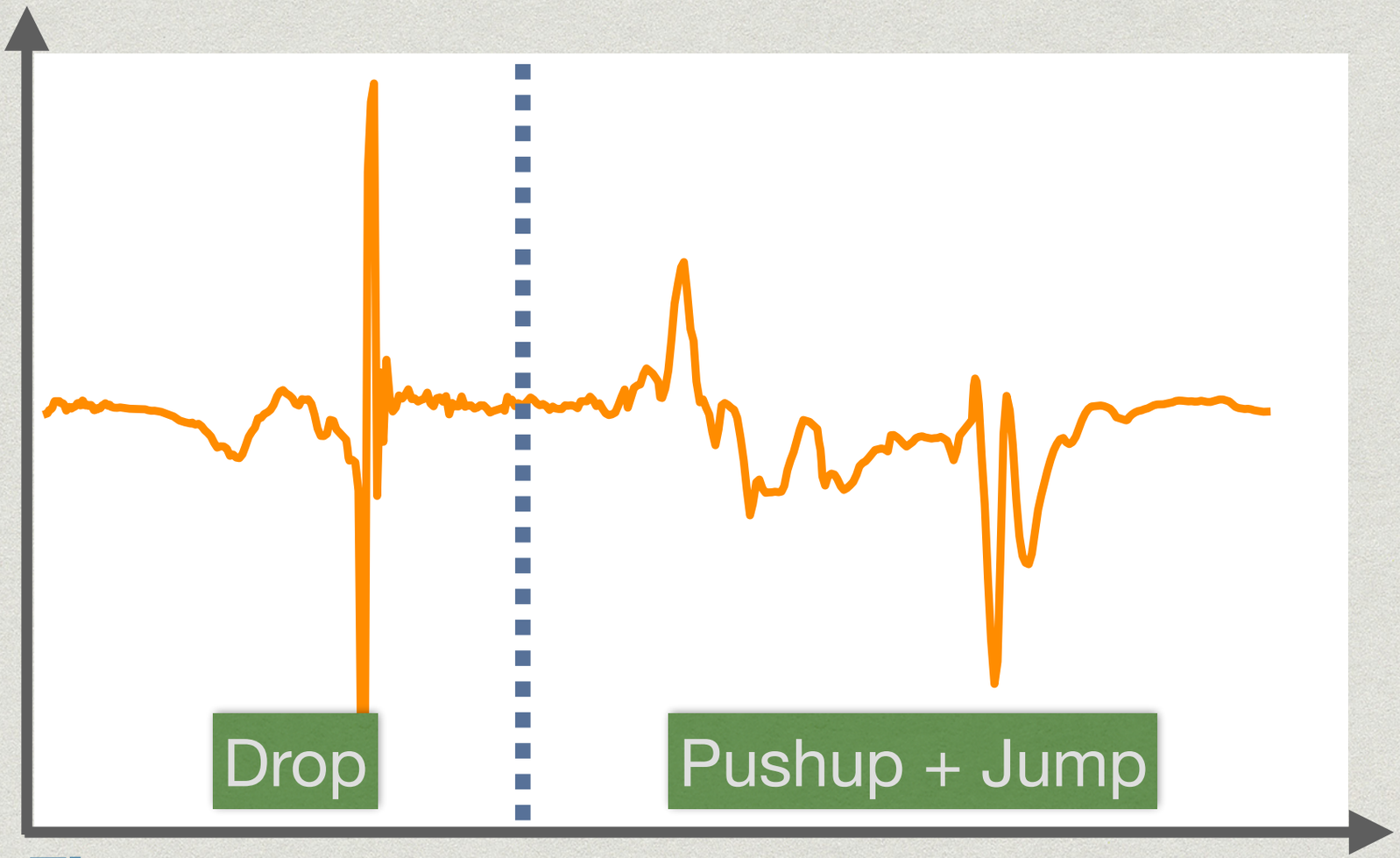
RICHARD DO

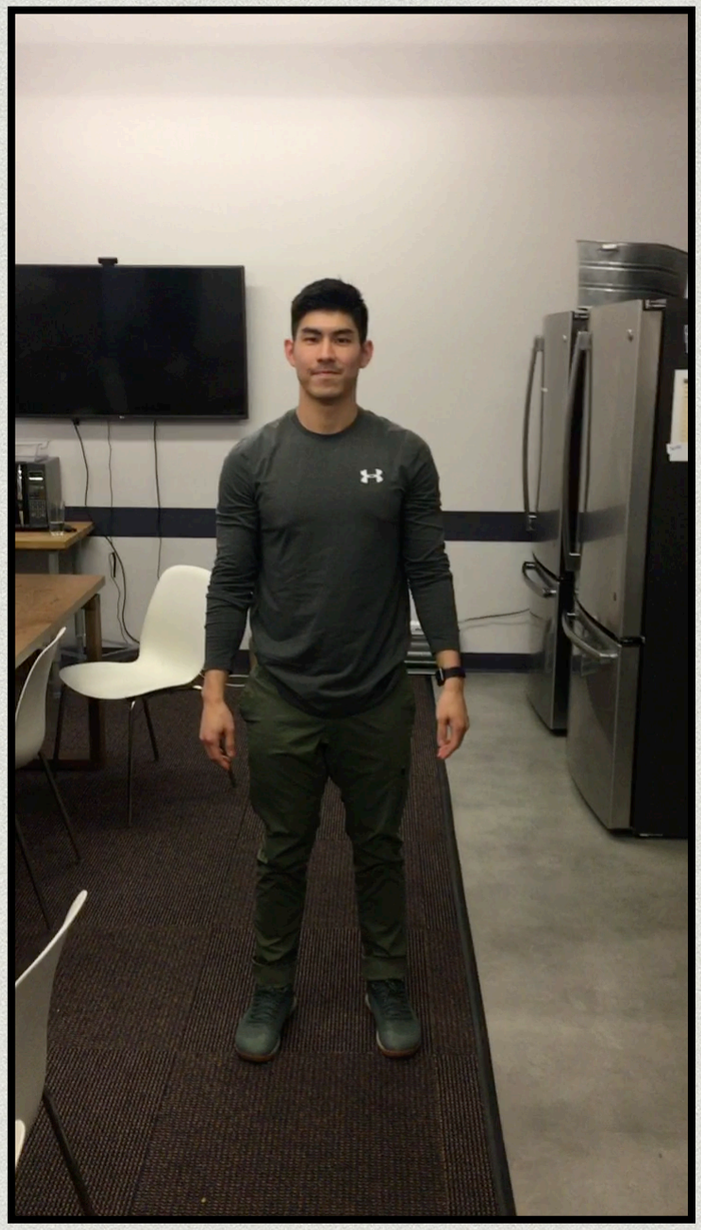
Data: 300+ burpees

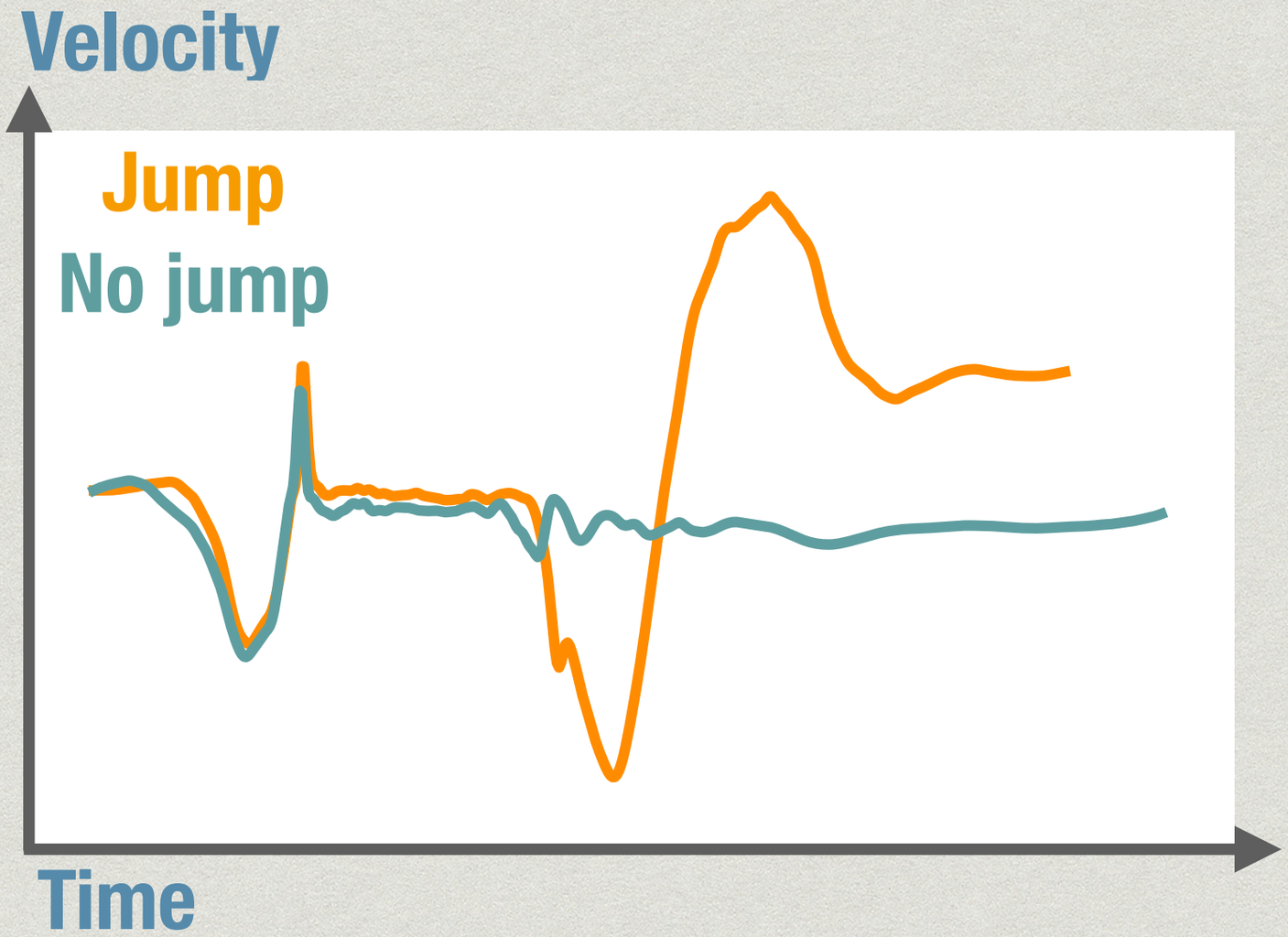
Burpee or burpee without jump


Acceleration
Burpee
Burpee w/o jump
Not Burpee
Time




Acceleration
Drop
Pushup + Jump
Time



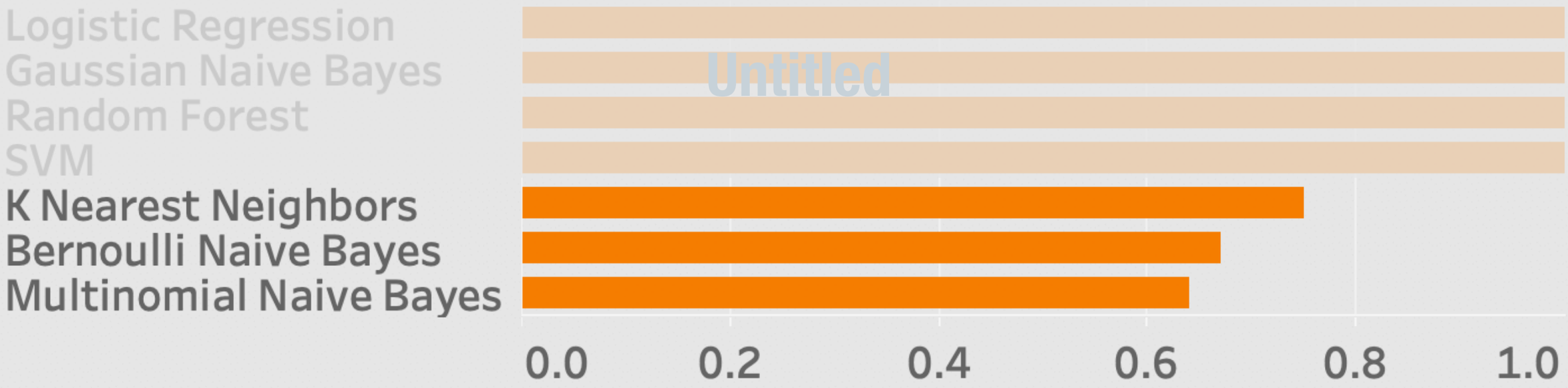


Features

1. “Energy”
2. Standard deviation
3. Absolute max

Model Performance

Precision Scores



Insights

- Real world environment is noisy
- Large variation in exercise signal measured between people

Future Work

- Utilize gyroscopes
- Additional exercises
- Build Apple watch application

Acknowledgements

Thanks to all the participants who volunteered their burpees:

Matt, Keith, Nathan, and Becca

THANK YOU!

Model Performance

Model	Parameters	Precision Score
Logistic Regression	Regularization: L1 C = 8.9 Train: 0.96	1.0
Random Forest	N Estimators: 17 Min Sample Split: 10 min Sample Leaf: 1 Max Features: ‘sqrt’ Max Depth: 80 Bootstrap: False Train: 0.94	1
Gaussian Naive Bayes	—	1.0
SVM	Kernel: Poly Degree: 2 C: 0.125 Train: 1.0	1
K Nearest Neighbors	N Neighbors: 7 Train: 0.94	0.75
Bernoulli Naive Bayes	—	0.67
Multinomial Naive Bayes	—	0.64