ActivPal Week #6

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WHAT HAVE WE DONE PREVIOUS WEEK?

CURRENT ISSUES WE ARE FACING

WHAT ARE THE GOALS FOR THE REMAINDER OF THIS SPRINT?

What have we done previous week?

- Creating features for our model
- Trained our first model
- Pearson correlation matrix
- New insights
- Data pre-processing

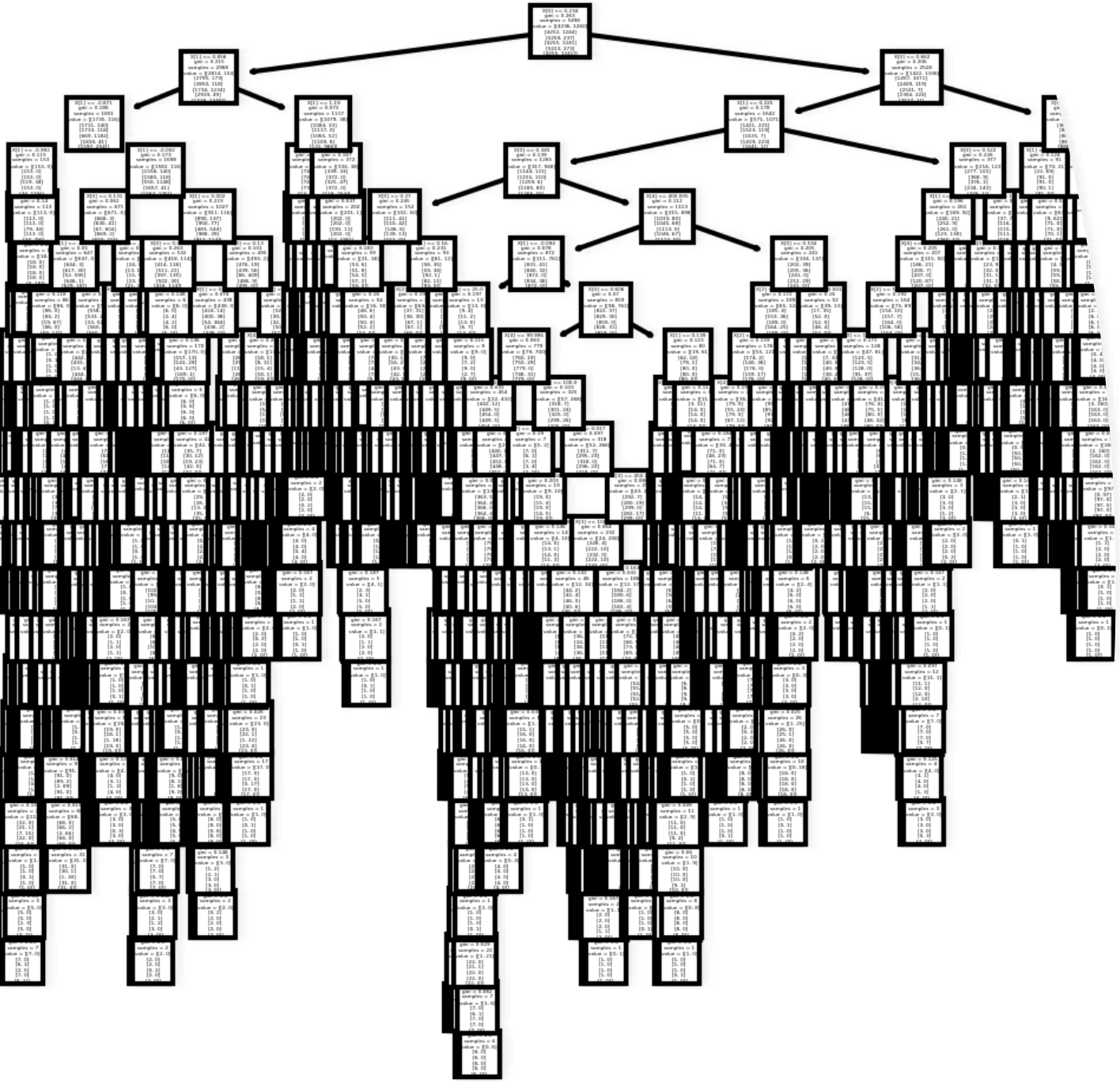
Creating features for our model

- Why?
- The features
  - Standard deviation acceleration (vertical)
  - Average acceleration direction of the body (vertical)
  - Peak-to-peak

Features dataset

- **Dataset details**
  - Segmented activities in 6.4S
  - Denormalized Dataset
    - More info in dia 9
- **Features**
  - Peak-to-peak distance for X, Y and Z axis
  - Standard deviation of Z axis
  - Mean of Z axis

	std_vert_acc	avg_vert_acc	peak_distance_x	peak_distance_y	peak_distance_z	activity_walking	activity_running	activity_jumping	activity_standing	activity_traplopen	activity_sitten
0	0.415354	0.180017	150.002	150.001	300.003	1	0	0	0	0	0
1	0.562155	0.189236	399.993	100.001	0.000	1	0	0	0	0	0
2	0.586077	0.157862	250.004	199.998	0.000	1	0	0	0	0	0
3	0.545233	0.147817	999.996	249.996	0.000	1	0	0	0	0	0
4	0.539769	0.154424	349.997	50.002	0.000	1	0	0	0	0	0



First run decision tree model results

- Splitted dataset in train en test
  - Test size 20%
  - Stratified on labels
- Model configurations
  - None
- Metrics (rounded)
  - Accuracy: 0.73
  - Precision: 0.85
  - Recall: 0.73
- These are very good results for first run
  - We are going to double check everything

Pearson correlation matrix

- MET(*Metabolic Equivalent of Task*) value has
  - no correlation with Y axis
  - average positive correlation with X and z axis

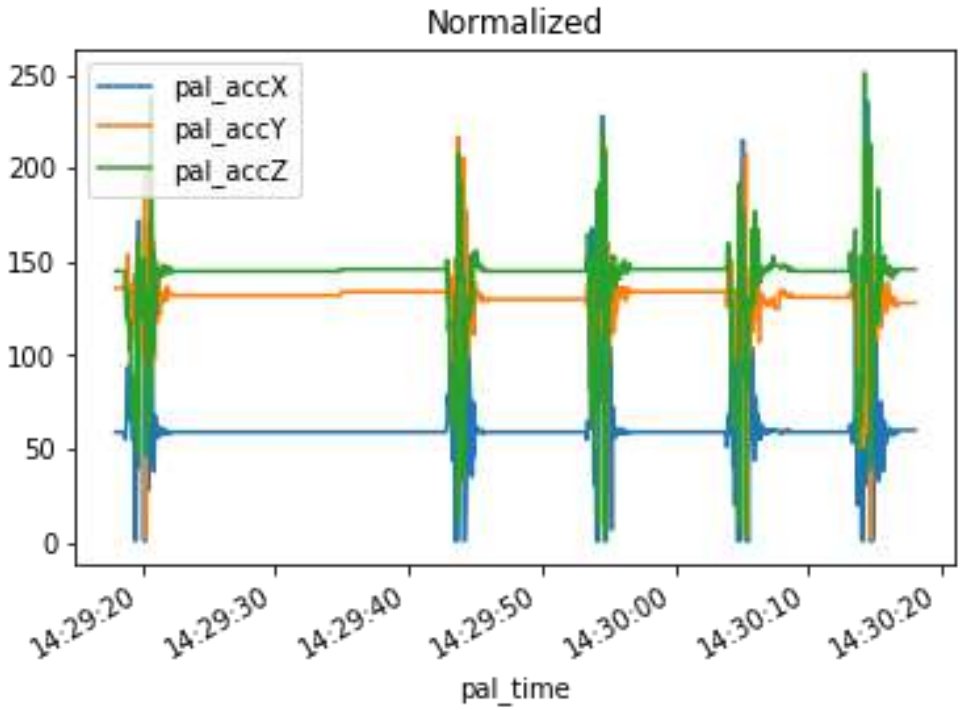
	met	x	y	z
met	1.000000	0.409502	-0.039179	0.406561
x	0.409502	1.000000	-0.592647	-0.067229
y	-0.039179	-0.592647	1.000000	0.753166
z	0.406561	-0.067229	0.753166	1.000000

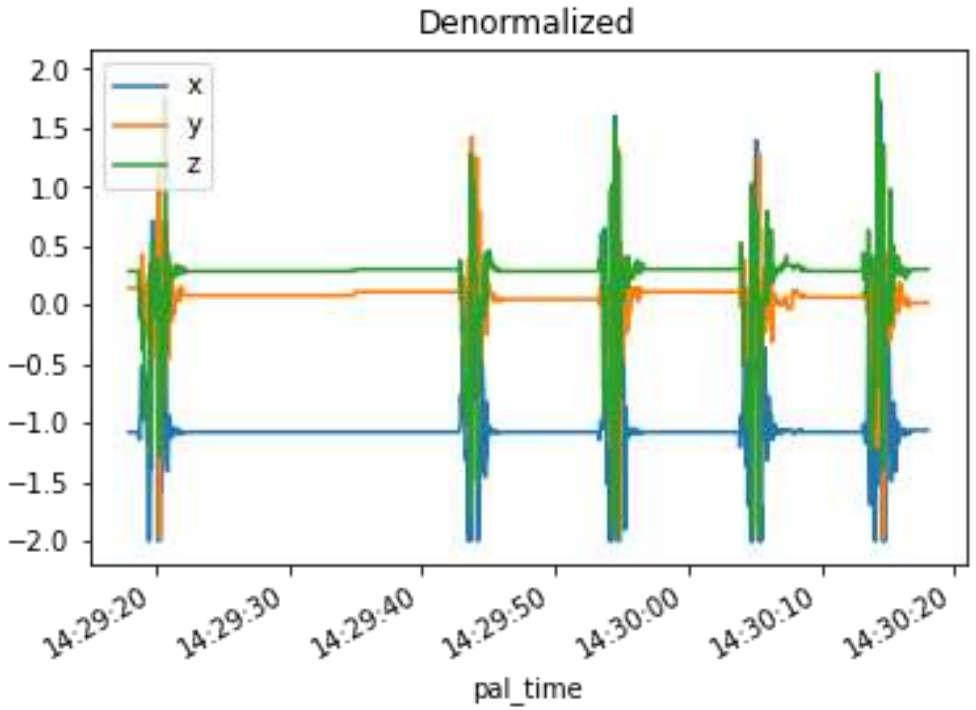
New insights

- What the X Y Z columns are
- The DiceFace Issue

X, Y, Z columns

- Scaled by formula: g = (value - 127) / 63
- g: 9.81 m/s





The DiceFace Issue

- 1 - up
- 2- back
- 3- right
- 4 - left
- 5 -front
- 6 – down

]:

pal_time	pal_diceFace	pal_avgAccX	pal_avgAccY	pal_avgAccZ
2019-09-16 12:45:07	5	96	128	61
2019-09-16 12:45:15	5	128	120	53
2019-09-16 12:45:30	5	103	123	59
2019-09-16 12:45:45	5	139	152	67
2019-09-16 12:46:00	1	109	136	135
2019-09-16 12:46:15	2	136	121	187
2019-09-16 12:46:30	2	136	121	187
2019-09-16 12:46:45	2	136	121	187
2019-09-16 12:47:00	2	136	121	187

Current Issues we are facing

- No DiceFace column in main dataset
- Incorrect X, Y and Z values in main dataset

What are the goals for the remainder of this sprint?

- Compile missing diceface values to main dataset
- More (possible) features
  - Medio-lateral directions
  - The frequency peak of the power spectral density
  - Antero-posterior direction

  - Apply these features to our model to recognize activitie

Any questions?