ActivPal Week #6

Matthew Turkenburg
Adnan Akbas
Colin Werkhoven
Ali Safdari
Mark Boon
Dmitrijs Sekijevskis

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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

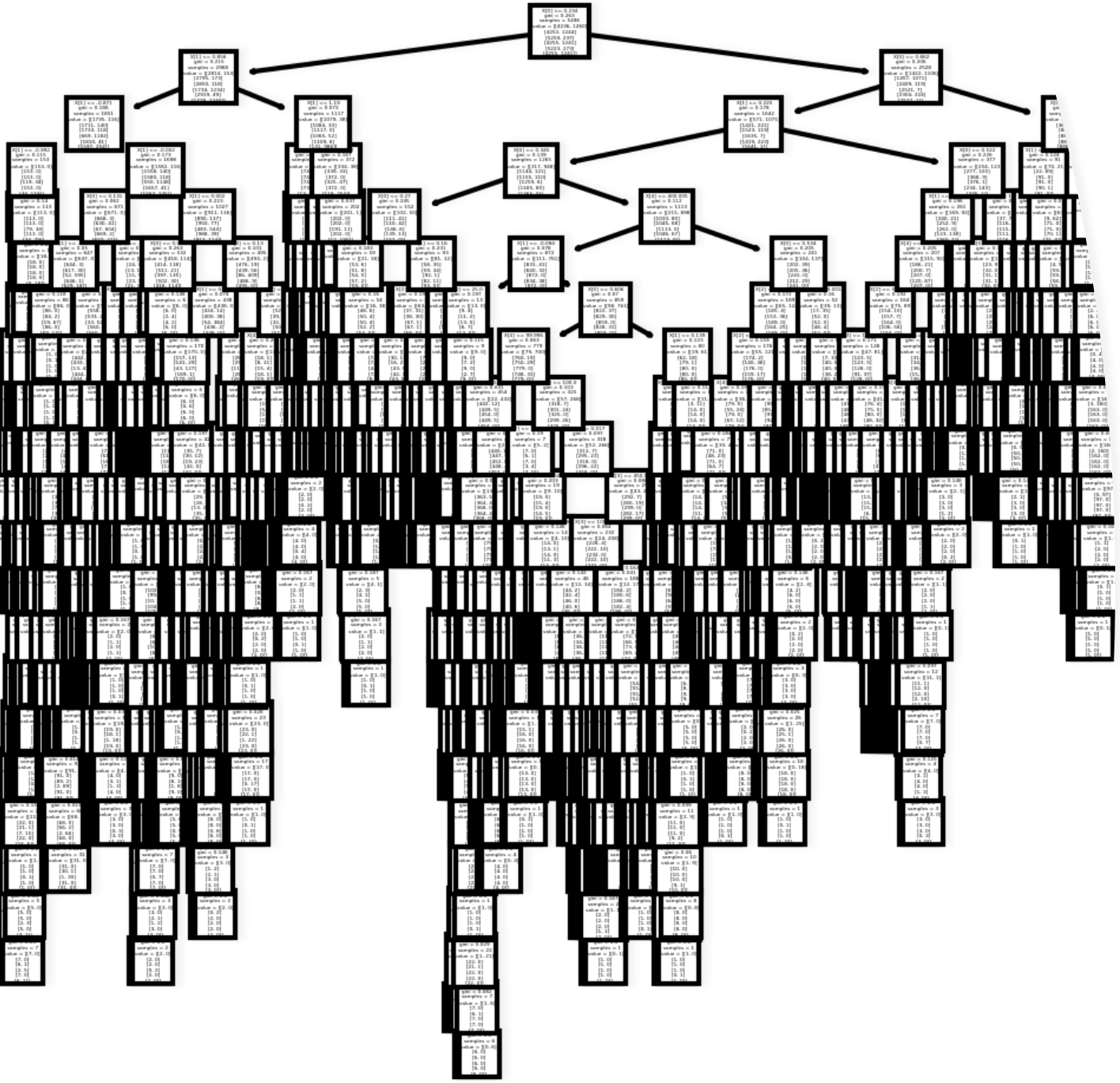
Creating features for our model

- 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

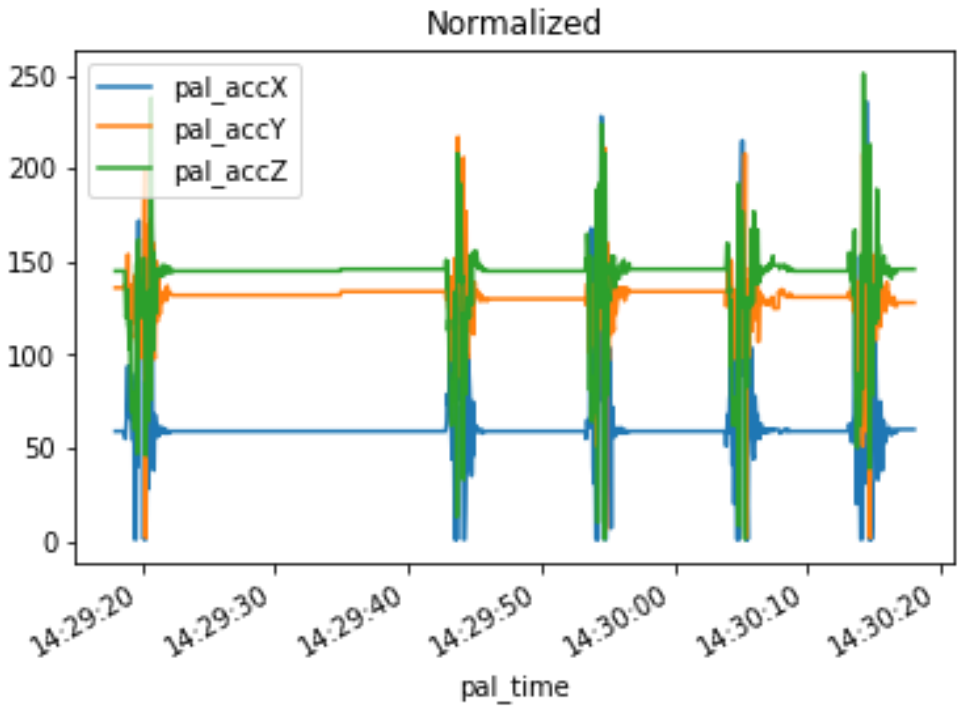
	met	x	y	z
met	1.000000	0.409502	-0.039179	0.406561
x	0.409502	1.000000	-0.592647	-0.067229
y	-0.039179	-0.592647	1.000000	0.753166
z	0.406561	-0.067229	0.753166	1.000000

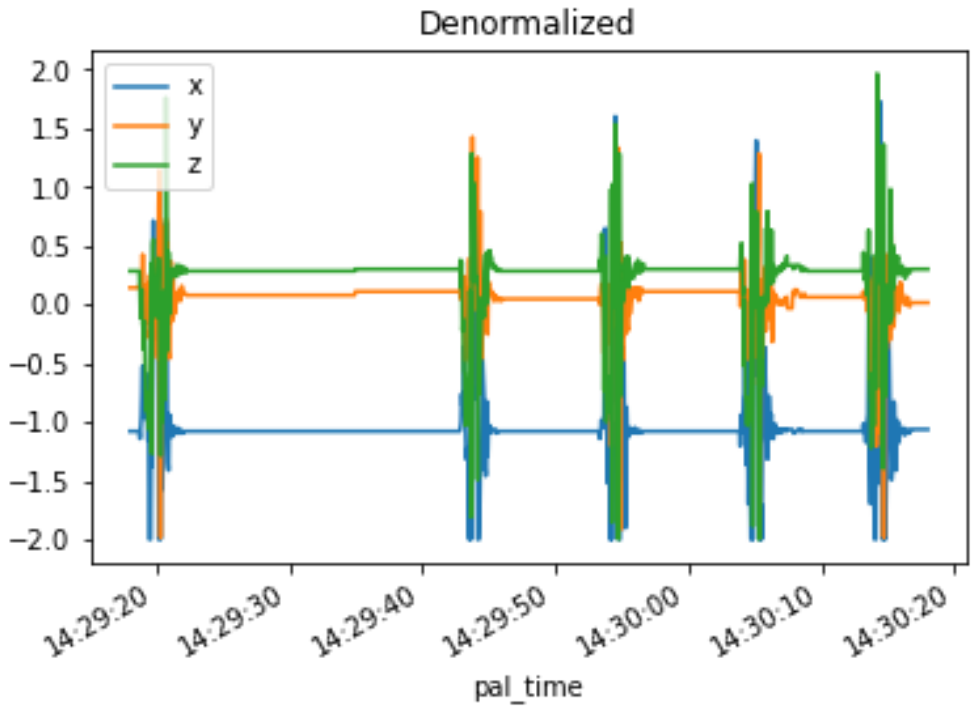
New insights

- 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?