ActivPal Week 9

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

Table of contents

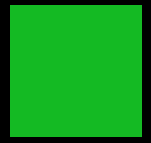
WHAT HAVE WE DONE PREVIOUS WEEK?

WHAT ARE OUR GOALS FOR THE NEW SPRINT?

What have we done previous week?

Sprint goal: Have basic MET prediction model (achieved)

Improved our activity recognition model

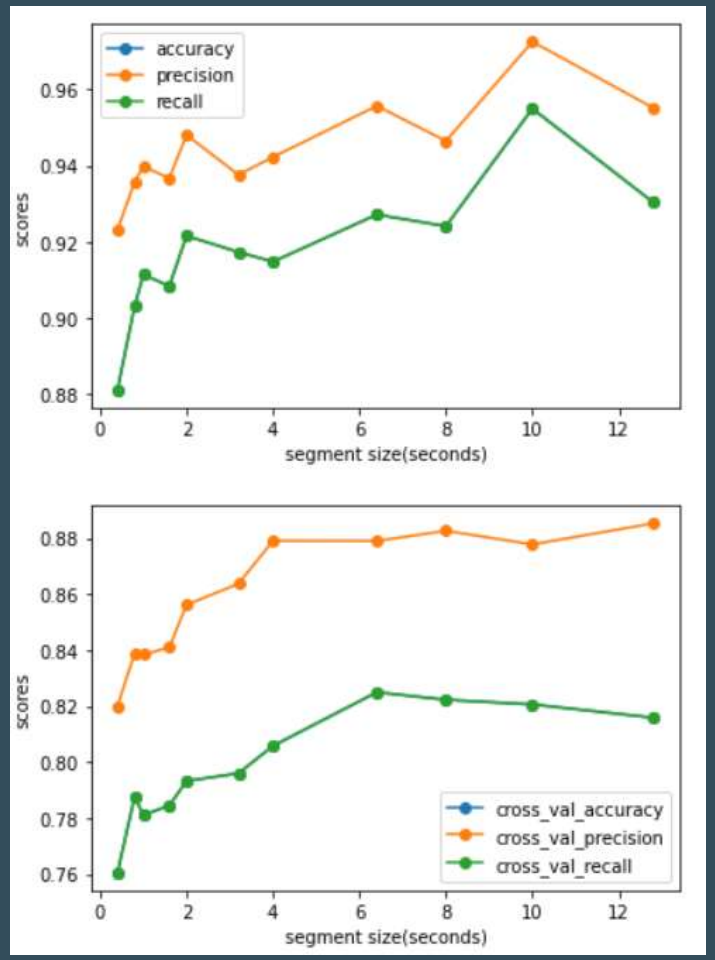


Created MET-prediction model

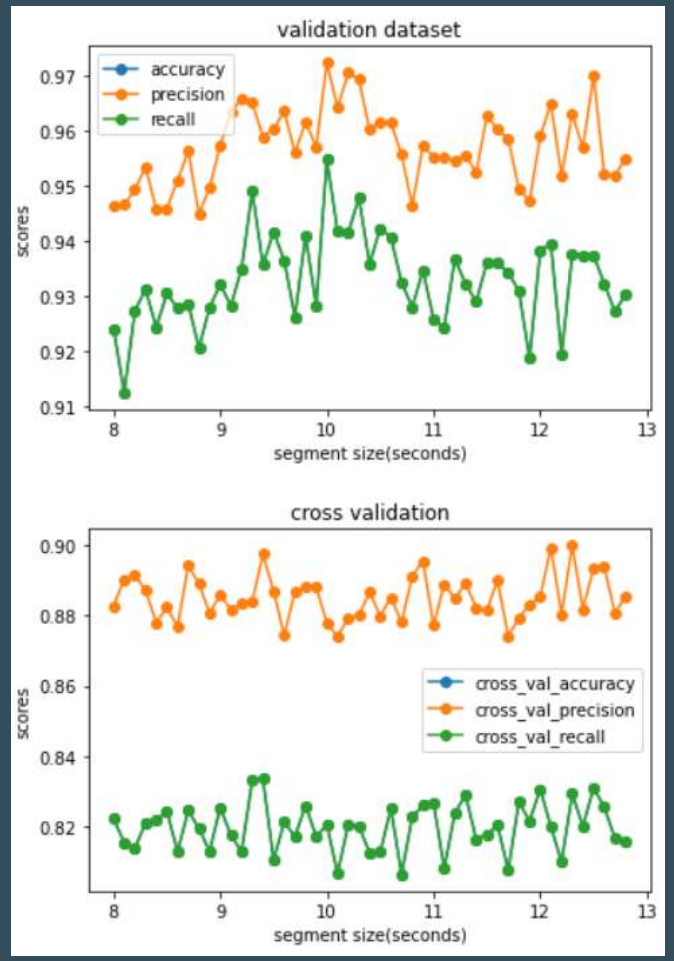
DiceFace Linear Regression Experiment

Activity recognition optimization: Time segment

1 TO 12.4 SECONDS



8 TO 13 SECONDS



9 TO 10 SECONDS

Activity recognition optimization: Amount of trees

MET Prediction Model Research

- To get nonbiased results we looked for multiple models that predict the MET value

MET Prediction Model Research

- - Random Forest Model
- - K-nearest Neighbour Model
- - XGBoost Model

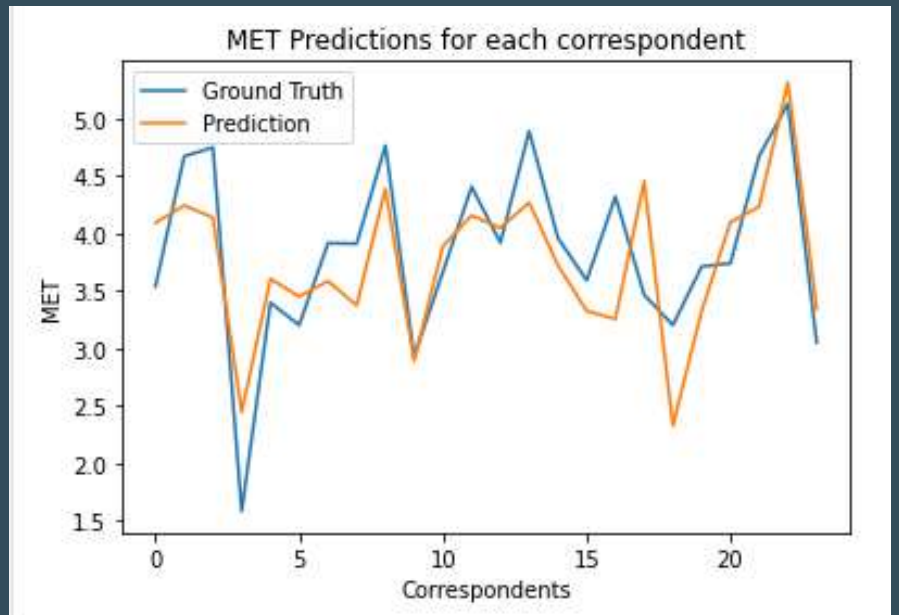
First MET Prediction Model

FEATURES IN OUR CURRENT RANDOM FOREST MODEL

- Sum of magnitude of acceleration
- Body Mass Index (BMI)
- Age Category (ranging from 15-79)
- Is the Person Sporting (is_sporting)
- Does the person meet the balance guidelines (meets_balance_guidelines)

pal_time	sum_mag_acc	bmi	age_category	is_sporting	meets_balance_guidelines
2019-10-11 13:52:00	1551.296652	21.911357	7.0	1.0	0.0
2019-09-26 13:10:00	1409.222602	19.773854	2.0	1.0	1.0
2019-10-02 14:39:00	1412.507255	36.148088	12.0	1.0	0.0
2019-10-11 10:19:00	1480.956743	20.189072	1.0	0.0	0.0
2019-09-30 11:40:00	1434.234623	22.041522	1.0	0.0	0.0

RANDOM FOREST CURRENT RESULTS




```
score = randomForest.score(X_test, y_test)
score
```

```
0.5552479060498544
```

Improved our activity recognition model

OPTIMIZATIONS / CONFIGURATIONS

- Inbalanced dataset
- Time segment size 9.4 seconds
- Amount of trees set to 10

RESULT

- Decision Tree model
  - Accuracy: 0.87
  - Precision: 0.95
  - Recall 0.87
- Random tree forest
  - Accuracy: 0.87
  - Precision: 0.95
  - Recall: 0.88

What are our goals for the new sprint?

- - The Topic of our next Sprint is:
  "Create a model that predicts MET value based on XYZ value"
- - Find new features to improve our MET prediction model
- - Improve/Update current models with our normalized dataset
- - Finish Research Plan

QUESTIONS?