

# Dwelling Energy Insights – Week 10

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# Progress during sprint 5

- Clarification of the project goal:
  - Prediction of the heating system type
  - Prediction of the number of solar panels
  - Prediction of the number of people
- We continued working on the algorithms and started some others:
  - Logistic Regression
  - K-nearest neighbor
  - Support Vector Machine
  - MLP
  - K-means

# First Results

## Logistic Regression

```
print(classification_report(y_test,y_pred, target_names))
```

	precision	recall	f1-score	support
E	0.50	0.16	0.24	383115
WP	0.49	0.93	0.64	498456
Zon	0.00	0.00	0.00	191431
accuracy			0.49	1073002
macro avg	0.33	0.36	0.29	1073002
weighted avg	0.40	0.49	0.38	1073002

## K-Nearest Neighbor

```
print(classification_report(Y_test, Y_pred, target_names))
```

	precision	recall	f1-score	support
E	0.41	0.47	0.44	382779
WP	0.55	0.61	0.58	498667
Zon	0.38	0.17	0.23	191556
accuracy			0.48	1073002
macro avg	0.45	0.42	0.42	1073002
weighted avg	0.47	0.48	0.47	1073002

## Support Vector Machine

```
print(classification_report(y_test,y_pred, target_names))
```

	precision	recall	f1-score	support
E	0.77	0.39	0.52	6088
WP	0.47	0.37	0.41	5920
Zon	0.46	0.79	0.59	5992
accuracy			0.52	18000
macro avg	0.57	0.52	0.51	18000
weighted avg	0.57	0.52	0.51	18000

# Improving the results (grouped by week)

## Logistic Regression

```
print(classification_report(y_test,y_pred, target_names))
```

	precision	recall	f1-score	support
E	0.56	0.56	0.56	351
WP	0.59	0.81	0.68	475
Zon	0.00	0.00	0.00	174
accuracy			0.58	1000
macro avg	0.38	0.46	0.41	1000
weighted avg	0.48	0.58	0.52	1000

## K-Nearest Neighbor

```
print(classification_report(Y_test, Y_pred, target_names))
```

	precision	recall	f1-score	support
E	0.49	0.51	0.50	360
WP	0.62	0.66	0.64	465
Zon	0.55	0.39	0.46	175
accuracy			0.56	1000
macro avg	0.55	0.52	0.53	1000
weighted avg	0.56	0.56	0.56	1000

## Support Vector Machine

```
print(classification_report(y_test,y_pred))
```

	precision	recall	f1-score	support
E	0.47	0.17	0.25	99
WP	0.49	0.87	0.63	135
Zon	0.62	0.10	0.17	52
accuracy			0.49	286
macro avg		0.53	0.38	0.35
weighted avg	0.51	0.49	0.41	286

# Remaining tasks

- Continue with the implementation of Neural Networks
  - RNN (Recurrent Neural Network)
  - MLP (Multilayer Perceptron)
- Using the KNMI temperature data
  - T (Temperature)
  - SQ (Duration of the sunshine)
  - Q (Global radiation (J/cm<sup>2</sup>))
  - N (Cloud cover index (1 - 9))
- Try our models on the new dataset with 120 houses
- Start writing the research paper introduction

	T	SQ	Q	N
date				
2017-09-12 00:00:00	14.8	0	0	7
2017-09-12 01:00:00	14.6	0	0	6
2017-09-12 02:00:00	14.4	0	0	7
2017-09-12 03:00:00	14.3	0	0	5
2017-09-12 04:00:00	14.2	0	0	6



# Questions/Feedback

- Are there any questions or feedback based on this presentation?



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