

Dwelling Energy Insights – Week 12

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Product Owner: Dr. ir. T.B. Salcedo Rahola

Done in sprint 6

- Implement different approaches (predict heating system type)
- Prepare new dataset of 120 houses
- LSTM Network
- Clean up our server environment
- Continue writing the research paper (feedback from the introduction)
- Start writing the portfolio

Approaches (Predicting heating system type)

1 model

Q: Which type of heating system does it have?

A₁: E

A₂: WP

A₃: Zon

64%



96%

3 different models

Q₁: Does it have E?

A₁: Yes/No

72%

Q₂: Does it have WP?

A₂: Yes/No

74%

Q₃: Does it have Zon?

A₃: Yes/No

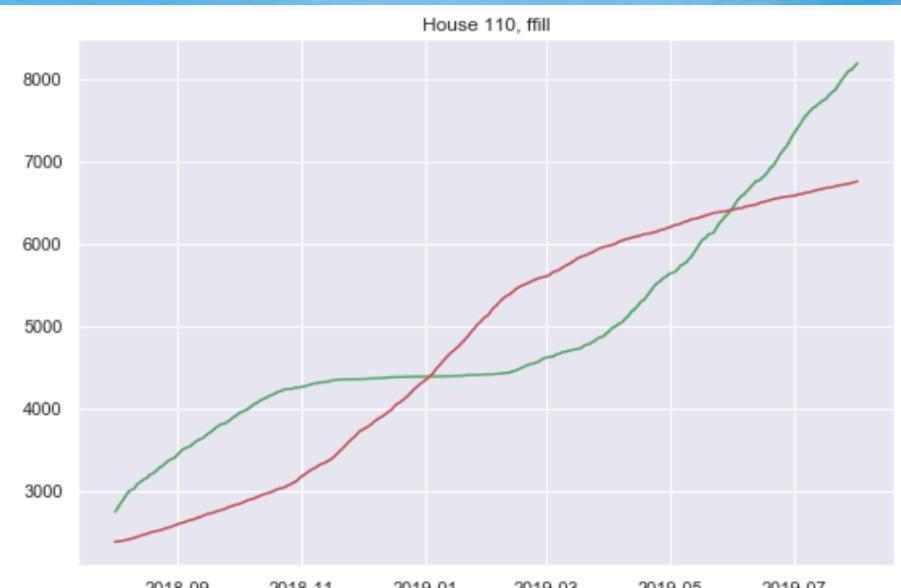
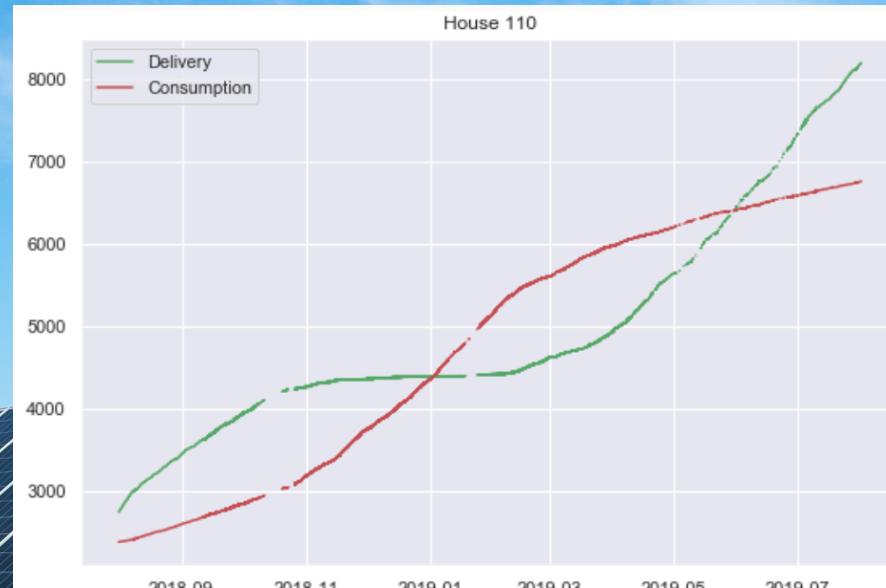
85%



120 Houses Dataset

- Data Information:
 - 10 months of data
 - 5 min interval → 15 min interval
 - Waiting for labels
- Data Cleaning:

delivery	consumption	T	SQ	Q	N	hour	day	week	month
0.0	0.000	15.0	4.0	84.0	8.0	13	24	43	10
0.0	0.449	15.0	4.0	84.0	8.0	13	24	43	10
0.0	0.504	15.0	4.0	84.0	8.0	13	24	43	10
0.0	0.578	15.0	4.0	84.0	8.0	13	24	43	10
0.0	0.914	14.0	0.0	35.0	8.0	14	24	43	10



LSTM

Predictions per 15 min
1-day sample

ZON result have almost 0%

WP result have 99%

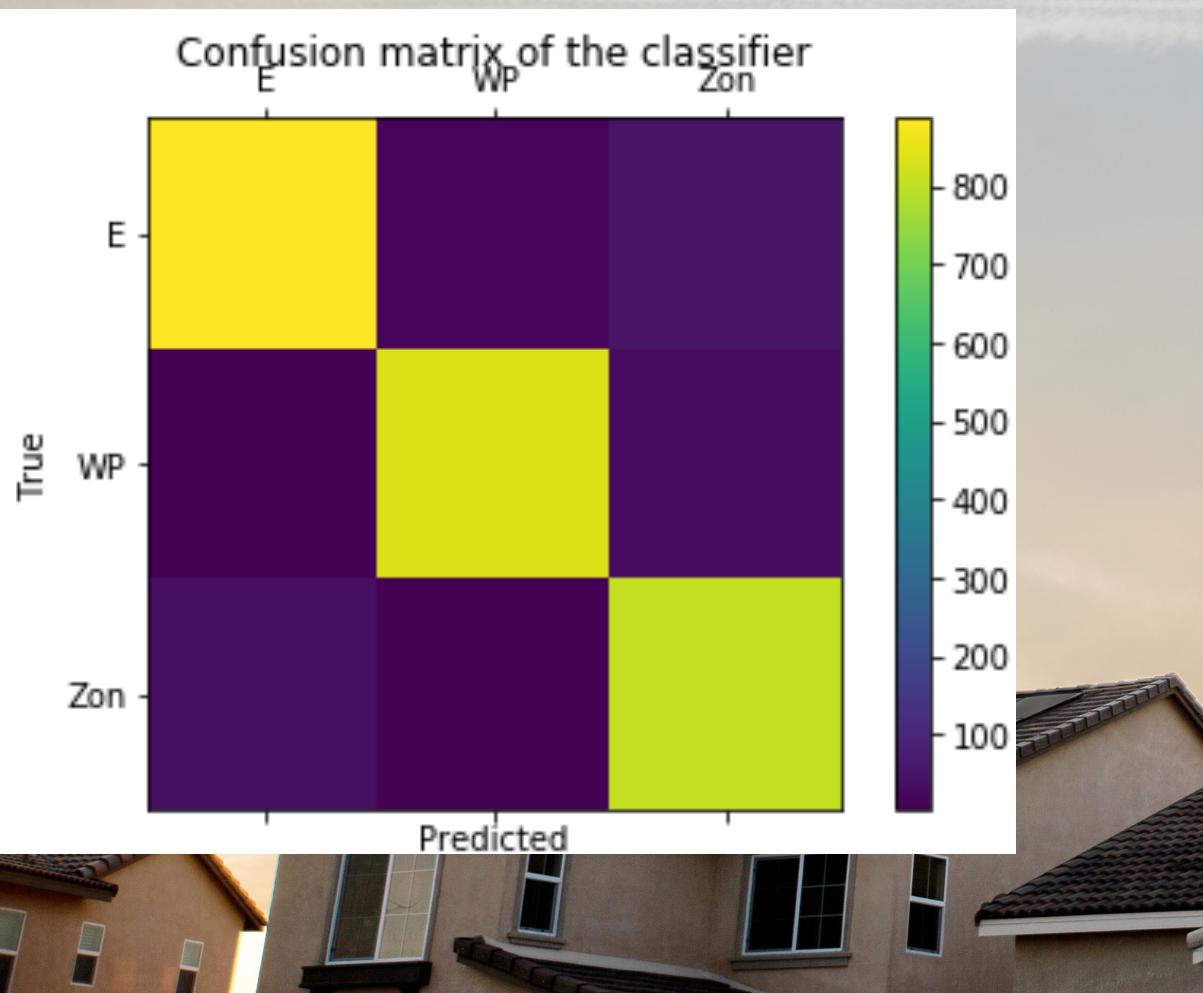
E result have almost 0.00013%



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LSTM

Long short-term memory
predicting heating system



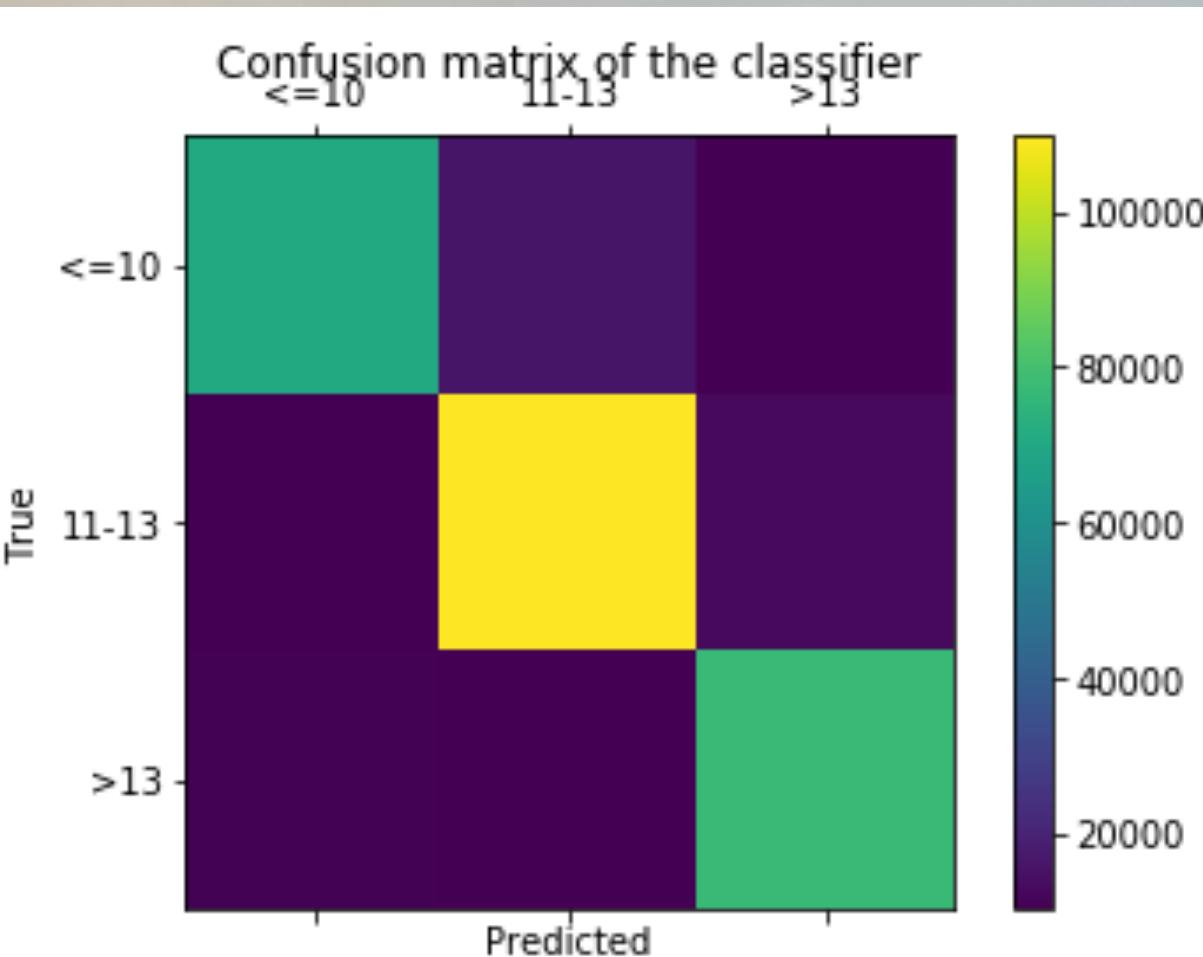
	precision	recall	f1-score	
E	1.0	0.81	0.92	0.86
WP	2.0	0.97	0.95	0.96
Zon	3.0	0.91	0.82	0.87
accuracy			0.89	
macro avg	0.90	0.90	0.90	
weighted avg	0.90	0.89	0.89	

precision ↓ recall f1-score

	precision	recall	f1-score	
E	1.0	0.95	0.93	0.94
WP	2.0	0.98	0.96	0.97
Zon	3.0	0.91	0.95	0.93
micro avg	0.95	0.95	0.95	
macro avg	0.95	0.95	0.95	
weighted avg	0.95	0.95	0.95	

LSTM

Long short-term memory predicting number of solar panels



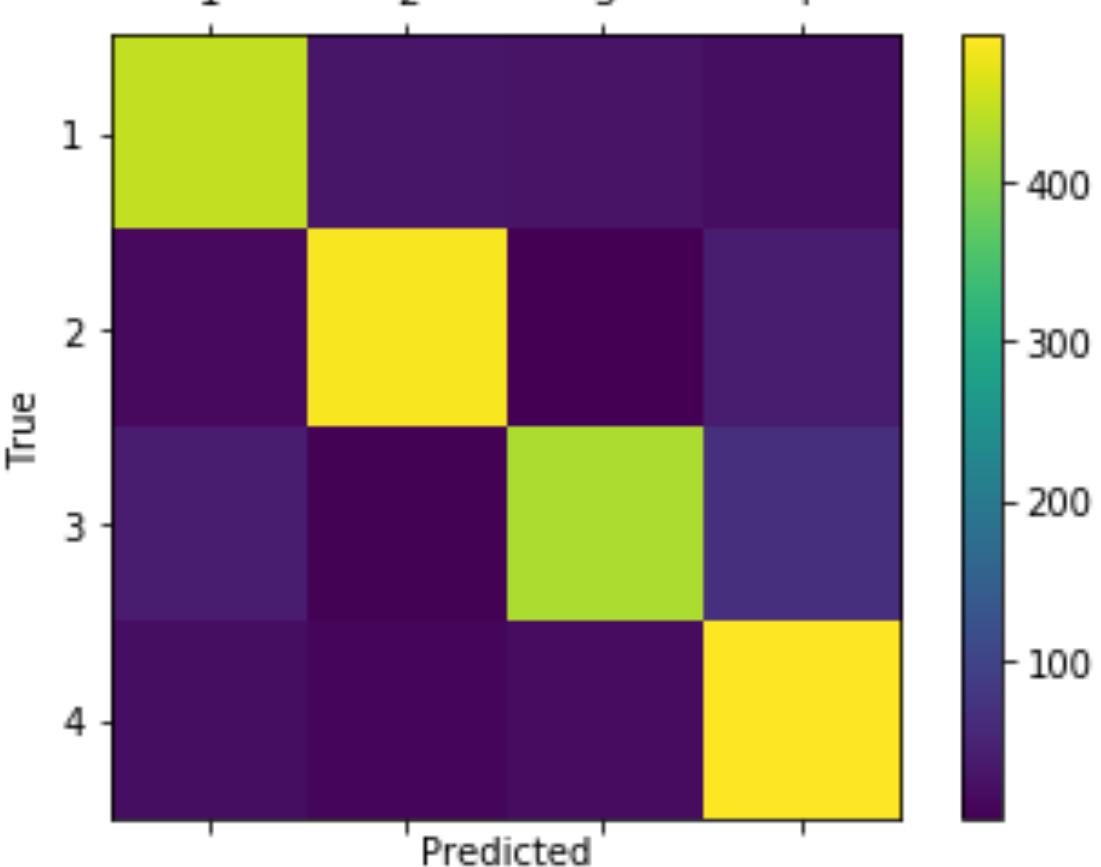
	precision	recall	f1-score
<=10	1.0	0.75	0.79
11-12	2.0	0.72	0.66
>12	3.0	0.69	0.69
accuracy			0.73
macro avg	0.72	0.72	0.72
weighted avg	0.73	0.73	0.73

	precision	recall	f1-score
<=10	1.0	0.77	0.73
11-12	2.0	0.81	0.83
>12	3.0	0.77	0.78
micro avg	0.78	0.78	0.78
macro avg	0.78	0.78	0.78
weighted avg	0.78	0.78	0.78

LSTM

Long short-term
memory predicting number of
people

Confusion matrix of the classifier



	precision	recall	f1-score
1.0	0.64	0.85	0.73
2.0	0.89	0.61	0.73
3.0	0.54	0.14	0.22
4.0	0.57	0.85	0.68
accuracy			0.66
macro avg	0.66	0.61	0.59
weighted avg	0.67	0.66	0.62
	precision	recall	f1-score
1.0	0.86	0.85	0.86
2.0	0.92	0.90	0.91
3.0	0.91	0.80	0.85
4.0	0.80	0.91	0.85
micro avg	0.87	0.87	0.87
macro avg	0.87	0.87	0.87
weighted avg	0.87	0.87	0.87

LSTM

Long short-term memory predicting Wats delivery

Confusion matrix of the classifier using Wp
 ≤ 2500 >=2750 & ≤ 3250 >3250



Remaining tasks

- Try our models on the new dataset with 120 houses
- Resume writing the research paper (Introduction & Techniques - Methods)
- Resume writing the portfolio

Questions/Feedback

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



GROENE MIENT
sociaal ecologisch wonen

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