

Amin Mansouri

Jefry el Bhwash

Levy Duivenvoorden

Niels van Drunen

Niels van Schaik

*Team Zero*

1





# Research Question

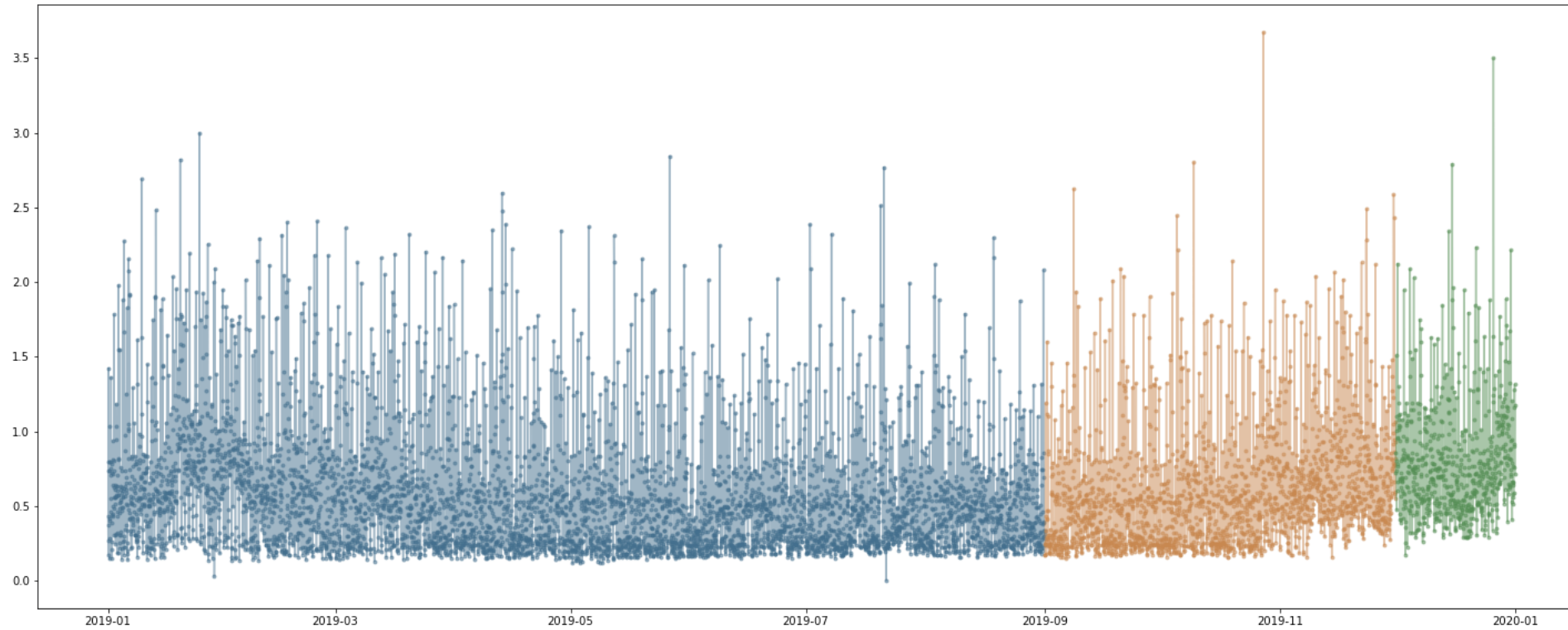
What is a suitable model to predict energy consumption and production of a “Zero At The Meter” dwelling, one day in advance with hourly resolution.

# Before the break

- Testing of (the testing of) Consumption
- LSTM improvements (both Consumption and Production)
- Paper chapters



## Datasplit for consumption



## Testing

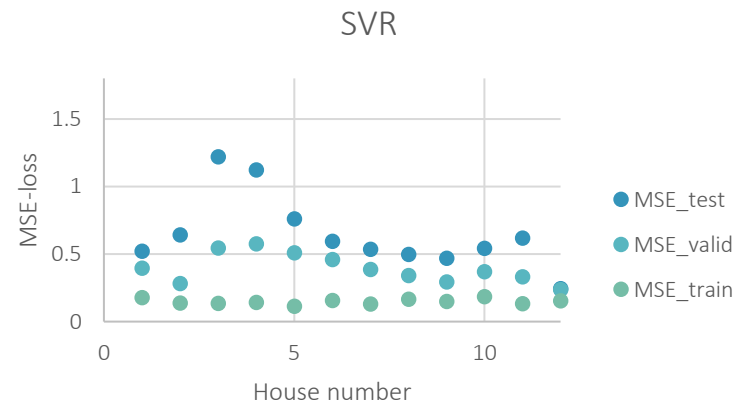
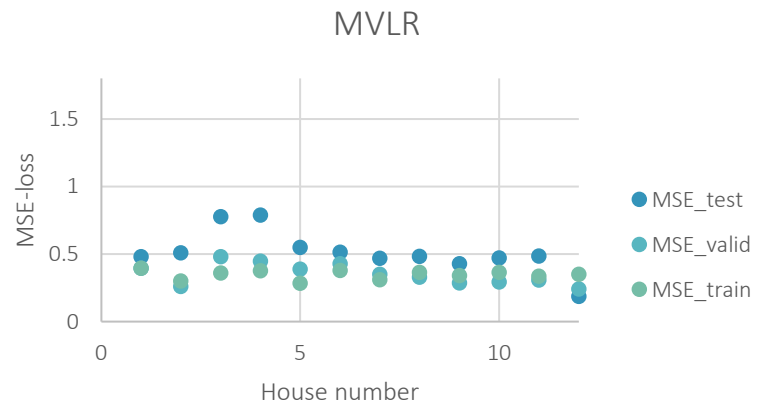
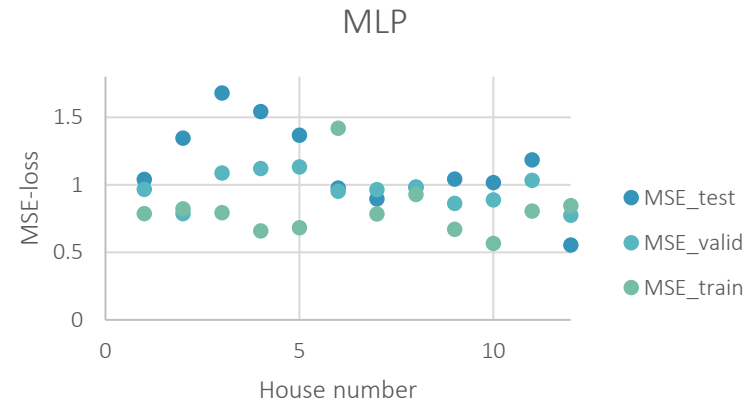
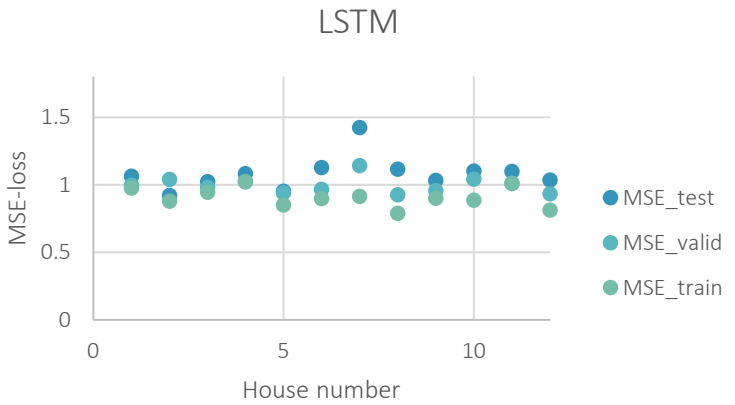
Datasplit for consumption, also multiple houses can be used effectively since they will have different usage patterns

MLP	MAE_train	0.842769	LSTM (OLD)	MAE_train	0.679590
	MSE_train	0.813446		MSE_train	0.906451
	MAPE_train	170.085129		MAPE_train	295.945112
	R2_train	-3925.147606		R2_train	-4.416101
	MAE_valid	0.799326		MAE_valid	0.704409
	MSE_valid	0.961986		MSE_valid	0.996757
	MAPE_valid	224.607212		MAPE_valid	388.758641
	R2_valid	-1752.108465		R2_valid	-5.097095
	MAE_test	0.761392		MAE_test	0.755781
	MSE_test	1.135562		MSE_test	1.081283
SVR	MAPE_test	227.784682	MVLRL	MAPE_test	304.395091
	R2_test	-1273.185205		R2_test	-5.332899
	MAE_train	0.206377		MAE_train	0.411139
	MSE_train	0.148119		MSE_train	0.347066
	MAPE_train	468.231529		MAPE_train	251.287834
	R2_train	0.757813		R2_train	0.434363
	MAE_valid	0.420552		MAE_valid	0.403417
	MSE_valid	0.394140		MSE_valid	0.350723
	MAPE_valid	430.641349		MAPE_valid	236.651087
	R2_valid	0.068262		R2_valid	0.376452
	MAE_test	0.571193		MAE_test	0.510726
	MSE_test	0.647381		MSE_test	0.512386
	MAPE_test	439.128721		MAPE_test	287.621153
	R2_test	-1.410626		R2_test	-0.019338

# Consumption Test results

Mean results of 12 houses

Basic dataset and basic models,  
will be changed this week

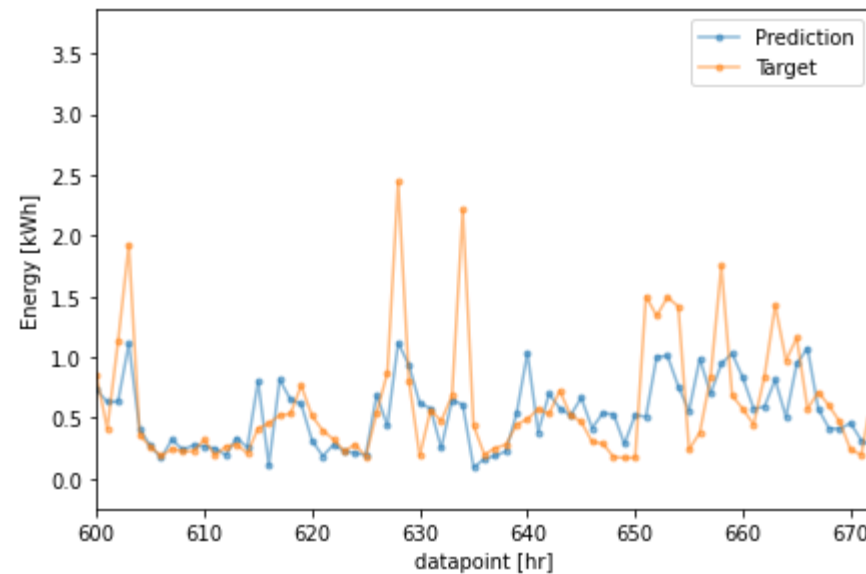


# Consumption Test results

MSE loss of 12 houses

Models are not optimized!

	hour	weekday	consumption
2019-01-01 00:00:00	-1.661325	-1.005184	-0.305184
2019-01-01 01:00:00	-1.516862	-1.005184	-0.739154
2019-01-01 02:00:00	-1.372399	-1.005184	-0.999535
2019-01-01 03:00:00	-1.227936	-1.005184	2.293371
2019-01-01 04:00:00	-1.083473	-1.005184	-0.473512



Area under prediction: 1157.6217041015625  
 Area under Target: 1196.030029296875  
 Difference: -38.4083251953125  
 Difference percentage: -3.21%

# Consumption LSTM

More features would most probably be beneficial



# Reetro-Retrospective

(we used reetro.io for this process)

## Improvements after week 14 :

- Communicating about our progress
- Spending time on the paper
- Team vision should be the same

## Improvements after week 15:

- Meetings need to be better prepared
- Focus on the paper
- Communicating about to-do's

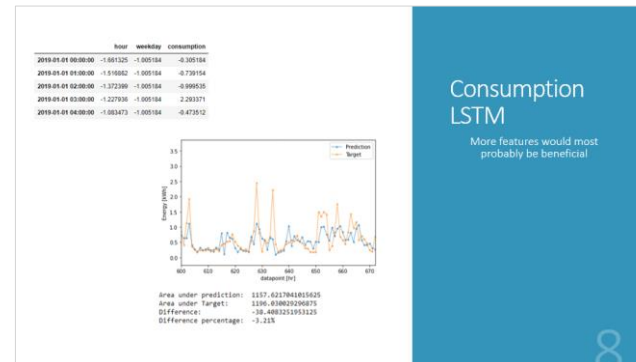
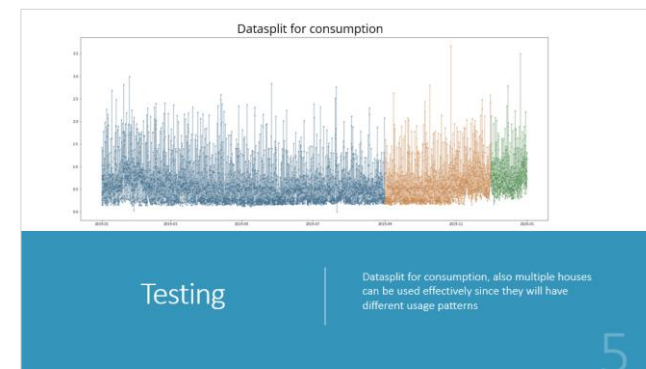


Went well week 15:  
Team collaboration is friendly and open  
We were able to get usefull feedback from the 360-feedback session  
Lunch presentation on Monday went smoothly

# This week

- Finish Testing Consumption and Production
- Finish writing the paper chapters
- Prepare for the exam (this Thursday)

# Remarks, Suggestions, Questions



Consumption Test results

Mean results of 12 houses

Basic dataset and basic models, will be changed this week

	MLP	LSTM (GRU)	MLP	LSTM
RMSE_train	0.462780	0.462780	0.462780	0.462780
RMSE_val	0.462780	0.462780	0.462780	0.462780
RMSE_test	0.462780	0.462780	0.462780	0.462780
RMSE_train	0.462780	0.462780	0.462780	0.462780
RMSE_val	0.462780	0.462780	0.462780	0.462780
RMSE_test	0.462780	0.462780	0.462780	0.462780
RMSE_train	0.462780	0.462780	0.462780	0.462780
RMSE_val	0.462780	0.462780	0.462780	0.462780
RMSE_test	0.462780	0.462780	0.462780	0.462780

6

## Reetro-Retrospective

(we used reetro.io for this process)

**Improvements after week 14 :**

- Communicating about our progress
- Spending time on the paper
- Team vision should be the same

**Improvements after week 15:**

- Meetings need to be better prepared
- Focus on the paper
- Communicating about to-do's

**Went well week 15:**

Team collaboration is friendly and open

We were able to get usefull feedback from the 360-feedback session

Lunch presentation on Monday went smoothly

9