

Bootcamp

Bringing ML Models

into Production

Capstone Results



pyladies
amsterdam



DEXTER

Alyona Galyeva

Agenda

- Capstone: Energy use case
- Mentors
- Participants presentations
- Q&A

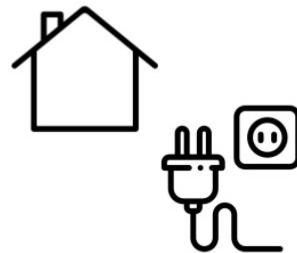


Capstone: Energy use case

Dexter - PyLadies case

OLD APPROACH

Determine
energy consumption

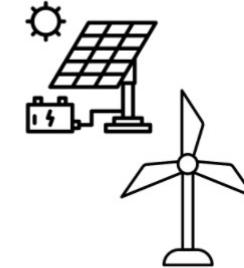


Adjust
energy generation

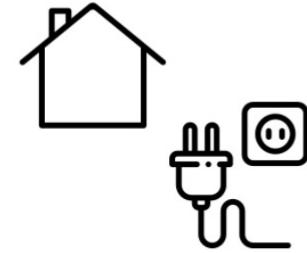


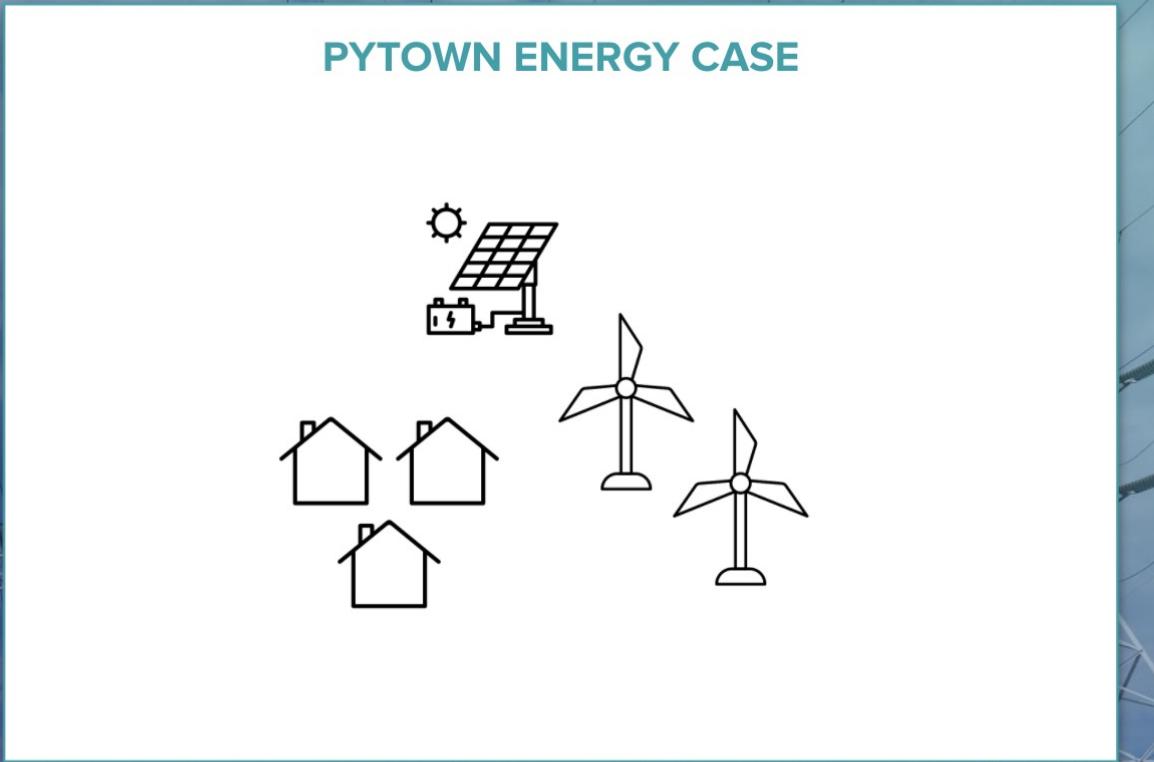
NEW APPROACH

Determine
energy generation



Adjust
energy consumption





Dexter-Pyladies energy case

Pytown is a village in the North of the Netherlands that wants to become fully self-sufficient with 100% renewable energy.



The village has built sufficient solar panels & wind turbines to produce their own energy demand.



The timing of the energy generation does not match the timing of demand. This raises a lot of problems for Pytown. Frequent blackouts are the order of the day. Can you help Pytown to adjust their demand to the energy generation?



A dashboard can help Pytown to adjust their energy demand

The residents of Pytown need to be informed to be able to adjust their energy consumption



Stop!

Only use absolutely essential electricity

Slow down!

Use less electricity than you would normally use

Go!

Use as much electricity as you want



First capstone task: Develop a solution to prevent power blackouts

Provide a weekly forecast in your dashboard

Data processing

3 data sources:
- energy load
- wind & solar predictions
- weather data

Model training

Weekly forecast:
- naive forecast
- linear regression with Fourier features

Evaluation

Optimize on MAPE with a sliding window approach

Deployment

Deploy the best model as Azure Machine Learning Batch pipeline, scheduled every Monday at 4am

Post-processing

Classify the advice on energy consumption & store in Azure Blob Storage

Monitoring

Show your advice on energy consumption in your Power BI dashboard



Second capstone task: Improve the solution to prevent blackouts

Prevent more blackouts by updating your prediction every 15 minutes

Data processing

2 data sources:
- energy load
- wind & solar predictions

Model training

Quarterly forecast:
- naive forecast

Evaluation

Optimize on MAPE with an expanding window approach

Deployment

Deploy the model as blob-triggered Azure function that fires every 15 minutes

Post-processing

Classify the advice on energy consumption & store in Azure Blob Storage

Monitoring

Show your advice on energy consumption in your Power BI dashboard

Dexter team





Mentors

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Participants Presentations



Q&A



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