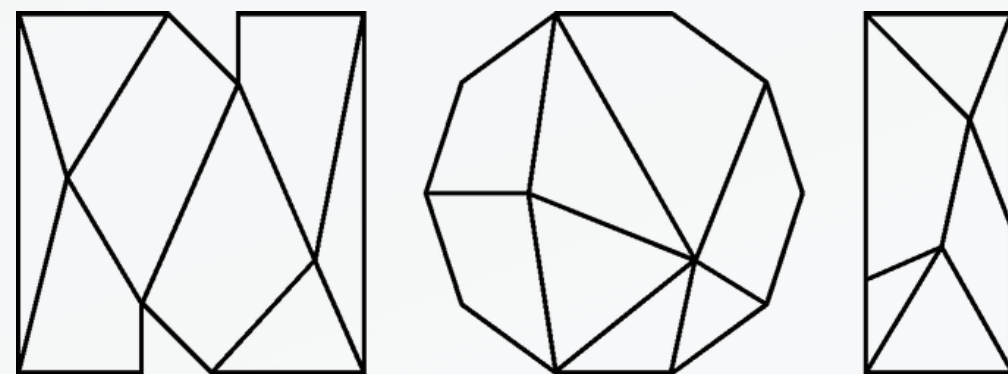




TEAM
POTA



TECHPARK SÜDTIROL /ALTO ADIGE



THE PROBLEMS

Matrycs Project:

- 1) Identify and validate model to predict the energy production of PV and consumption of building.
- 2) Develop and verify models for predicting HVAC energy consumption
- 3) Build and validate models for predicting indoor and outdoor temperatures

LifeWare Project:

- 1) Create a local prototype of a language model that offers coding suggestions in the style of Copilot specifically for Smalltalk programming language.



MATRYCS

PIPELINE

- **data exploration**
- **data integration**
- **model definition**
- **performances**

DATASET

- **PV dataset**
- **HVAC dataset**

DATA EXPLORATION

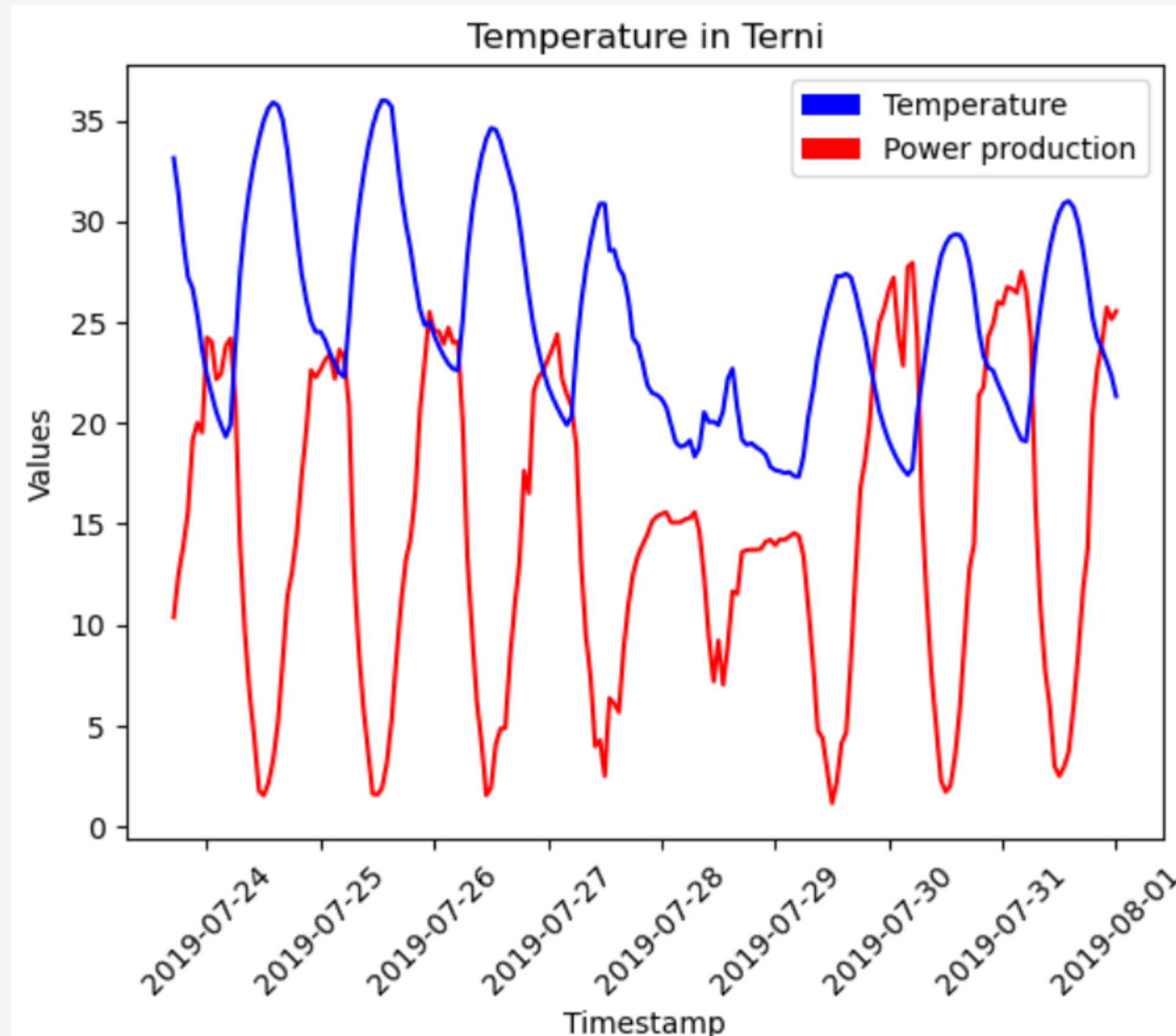
PV DATASET

- production and consumption **trends** in the dashboard
- **negative values** of power production
- compute the **seasonality** attribute

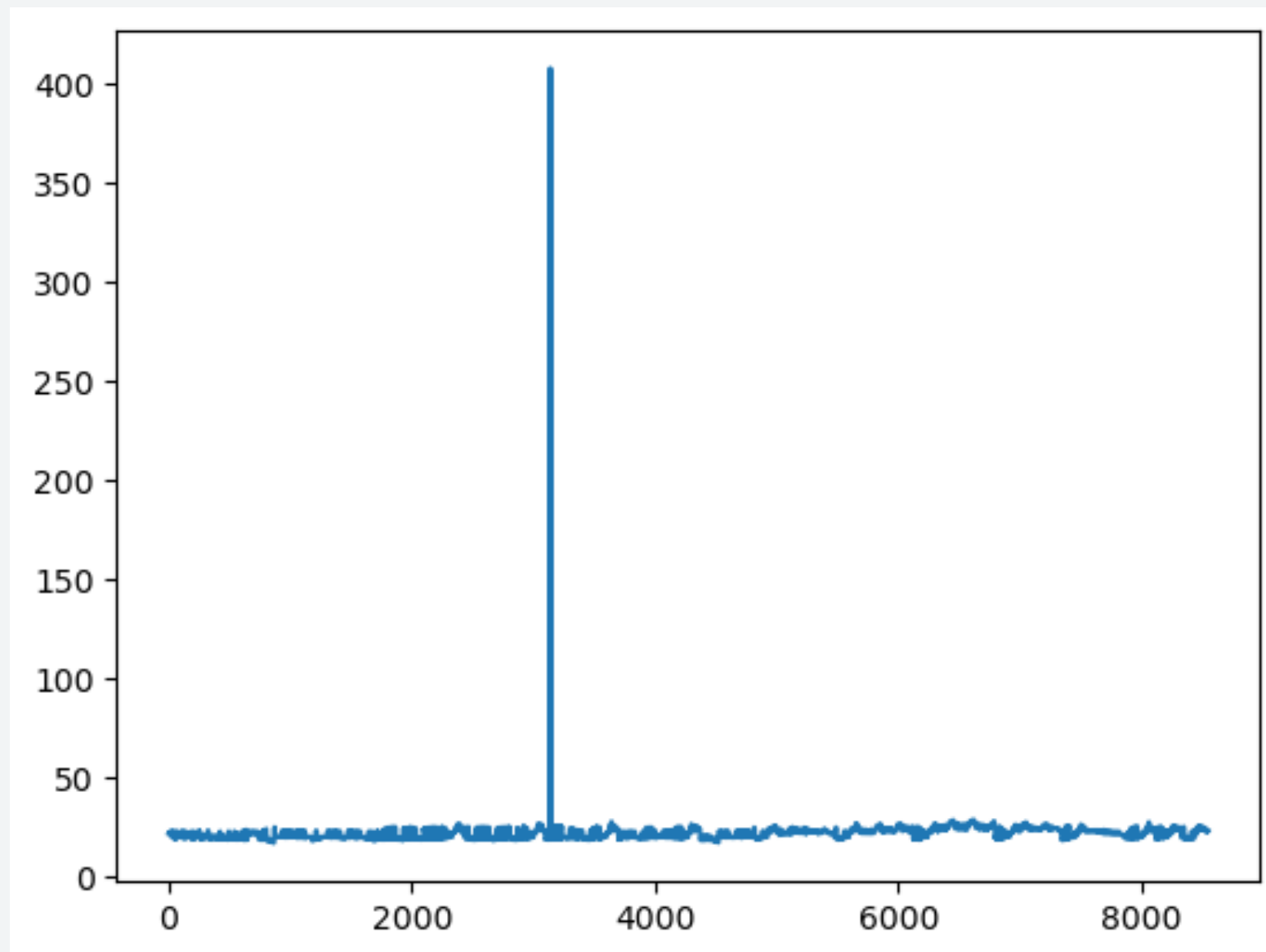
HVAC DATASET

- **missing values** with mean replacement
- **outliers** detection

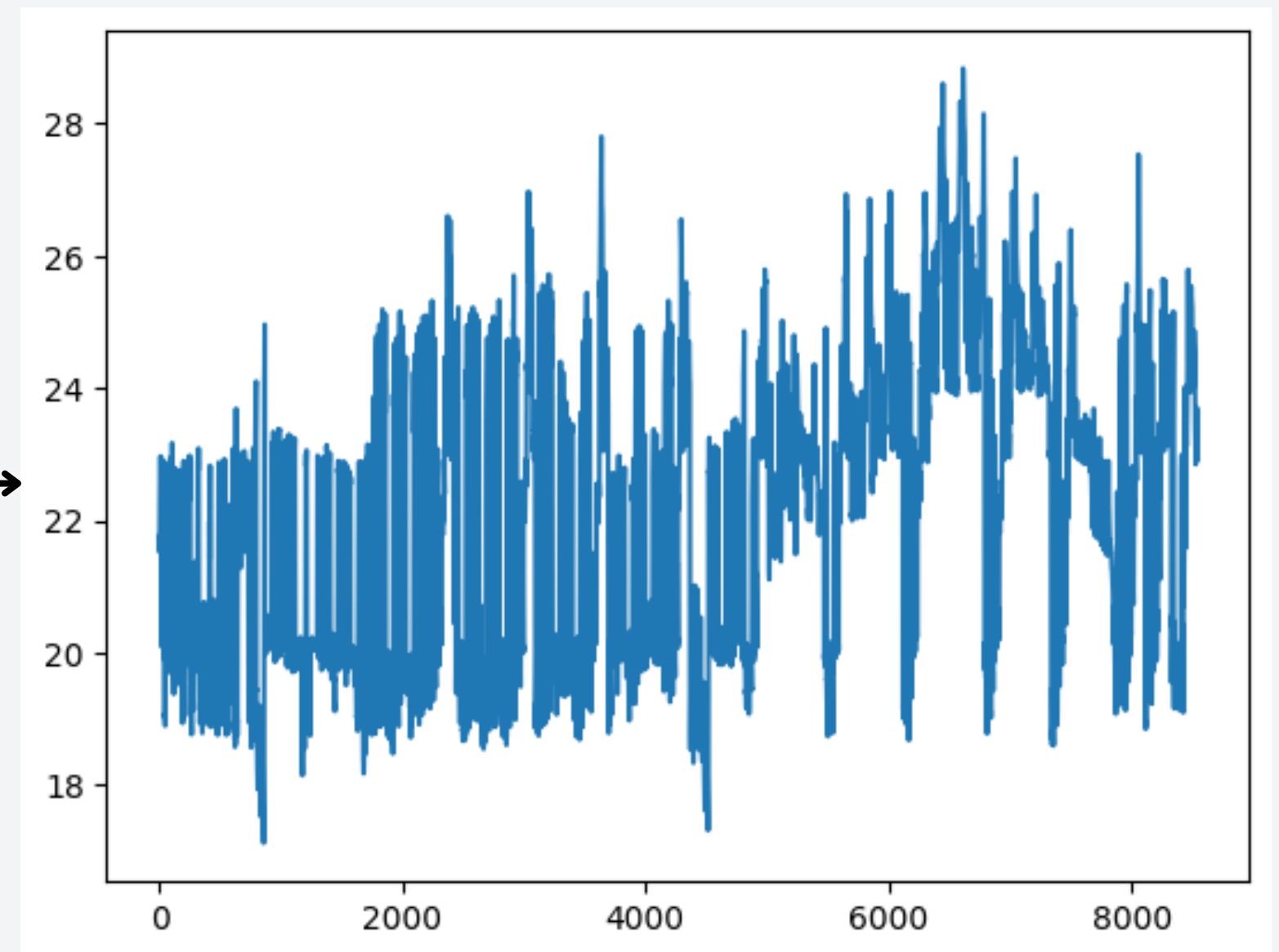
TEMPERATURE VS POWER PRODUCTION



OUTLIER

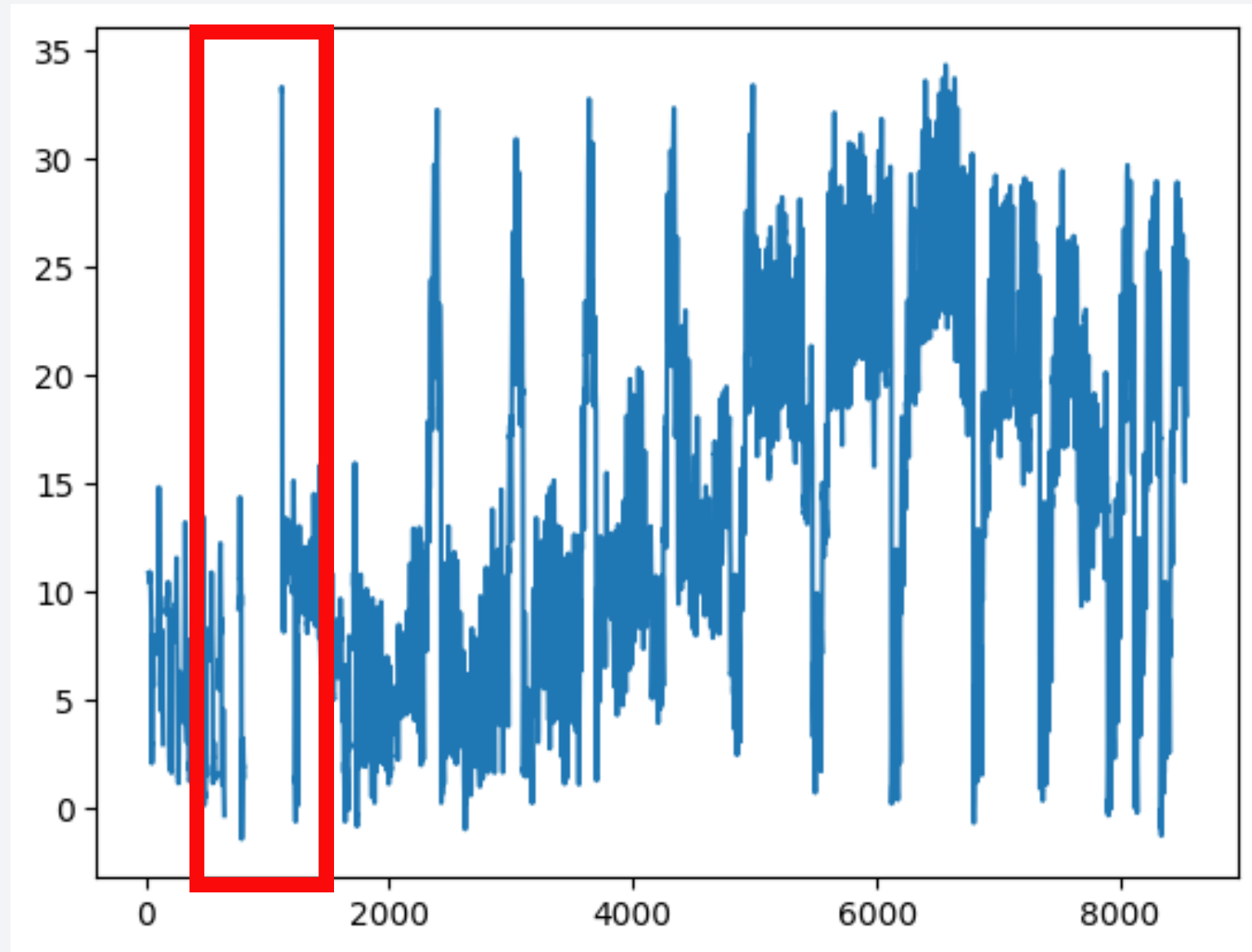


before

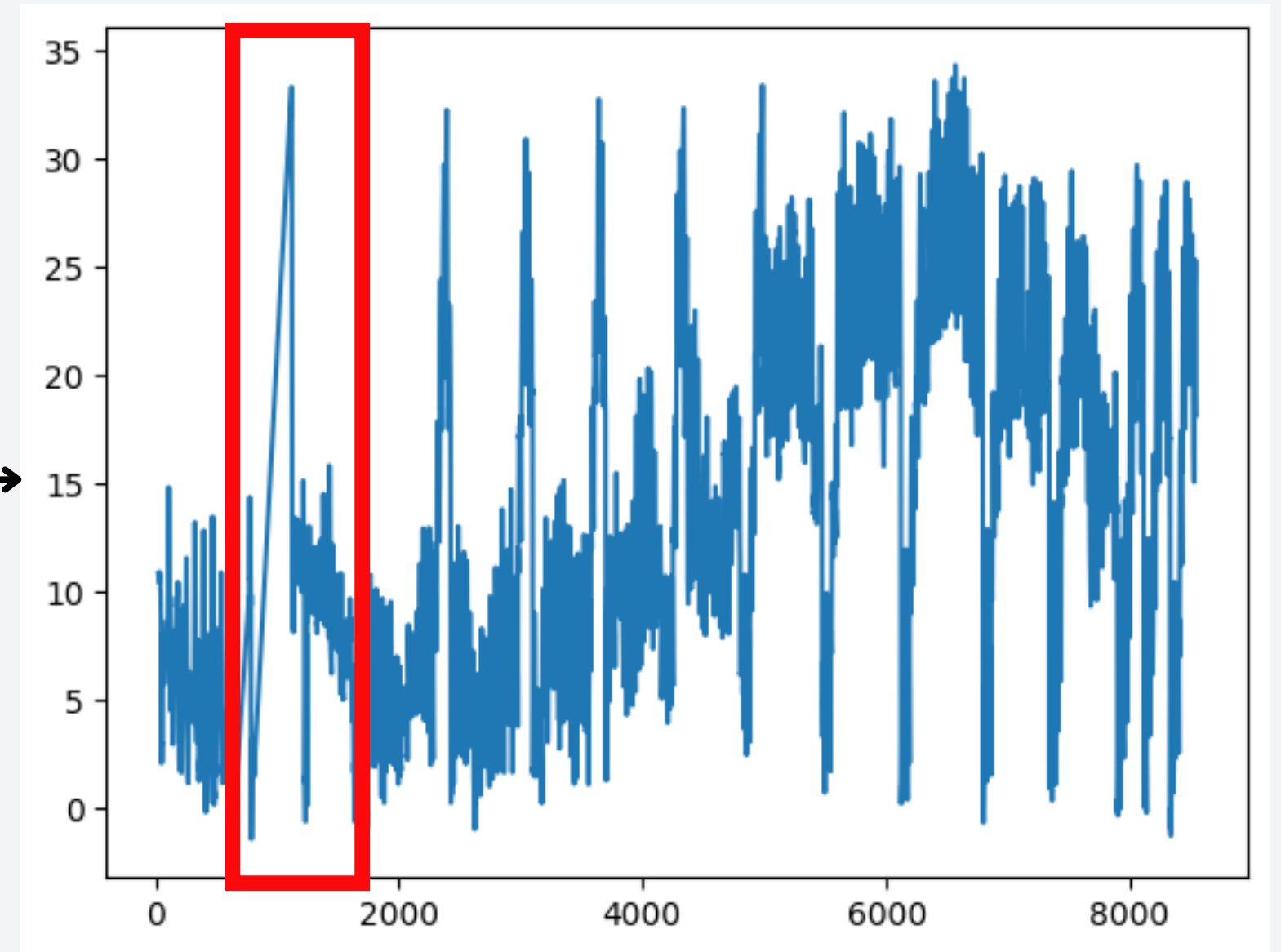


after

HOLE



before



after

DATA INTEGRATION

PV DATASET

- weather dataset from **europaean commission** [open dataset](#)
- dataset merging with the original one on the hourly timestamp

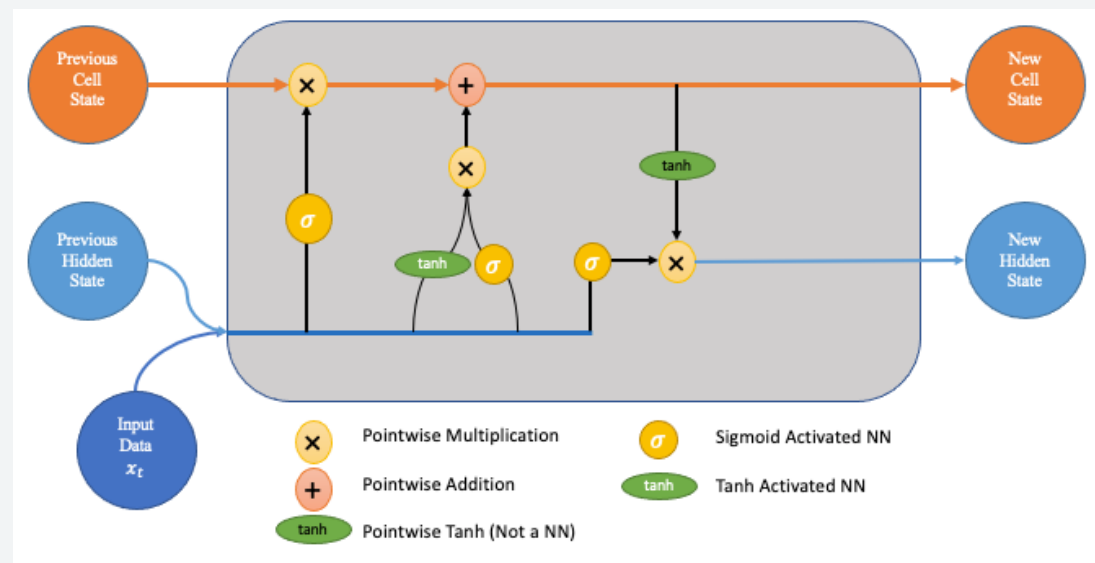
MODEL DEFINITION

df1:

- $\hat{y}(\text{PV_production} | \text{temperature, sunheight, wind speed})$
- $\hat{y}(\text{Building_consumption} | \text{temp, H_sun, wind_speed})$

df2:

- $\hat{y}(\text{flat} | \dots)$
- $\hat{y}(i1, i2, i3 | \dots)$
- $\hat{y}(\text{ext} | \dots)$



EA-LSTM: Evolutionary attention-based LSTM for time series prediction
Time series prediction with deep learning methods, especially Long Short-term Memory Neural Network (LSTM), have scored significant achievements in re...
E sciencedirect.com

PERFORMANCES

The metrics taken in count are the following:

- **Mean Absolute Error**
- **Root Mean Square Error**
- **R-Squared**

Demo time!

