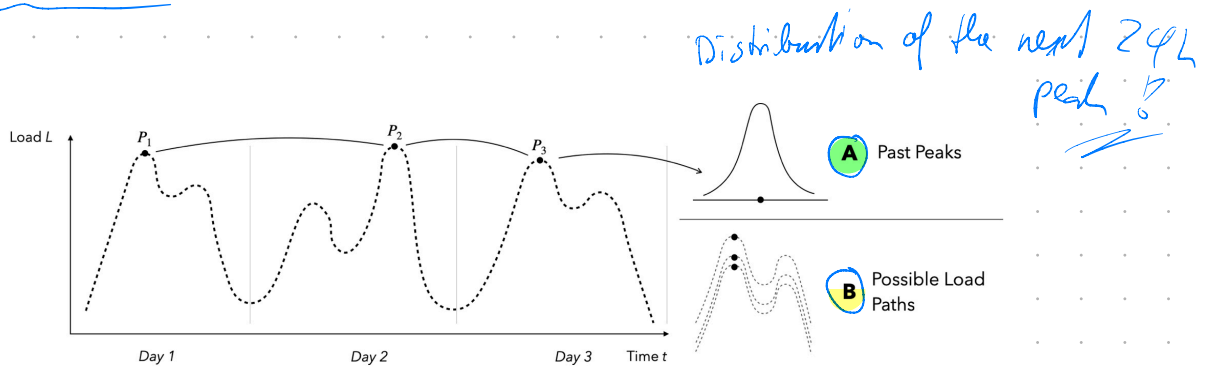


The path of peak prediction

I. Motivation



II. Data

2015-2024 aggr. energy demand data for Germany

Non-stationary

Seasonality

↳ daily (→ hourly dummies)
 ↳ weekly (→ weekday dummies)
 ↳ annual (→ monthly dummies)

⇒ Fourier Trfo

III. Models

Goal: \hat{P}_t

$$\underbrace{F_{P_t}^{-1}(q)}_{\text{distribution based}} = \underbrace{\hat{P}_t + F_{\epsilon}^{-1}(q)}_{\text{point-based}} \Leftrightarrow P_t = \hat{P}_t + \epsilon_t, \quad \epsilon_t \sim F_{\epsilon}$$

\hat{P}_t ... point forecast

distribution based

point-based (A)

(A) (B) ↳ hist. simulation

(A) ↳ QRA

(B) ↳ Road Path Simulation

- ARX
- ARMA
- NN

Shuffle

AR-1

- ARX
- ARMA
- NN

One model per hour