Forecasting at Scale

Christian Barz

2020-07-22

Prophet and Alternatives

Prophet library

The Prophet library[1] is a model and a framework.

- targets at non-experts with background business knowledge
- less knowledge about time series is required
- easy to configure
- flexible for a wide range of business problems

[1] Taylor, Letham, Forecasting at scale, 2017, The American Statistician

Alternatives

The `forecast` package in `R` provides some alternative automated times series models, for example

- `auto.arima`[2], fits mutliple ARIMA models and take the best fit
- `ets`[3], fits mutliple exponential smoothing models and take the best fit
- `snaive`[4], random walk model with seasonality

[2] Hyndman, Khandakar et al. 2007, Automatic time series for forecasting: the forecast package for R

[3] Hyndman, Koehler., Snyder & Grose, 2002, 'A state space framework for automatic forecasting using exponential smoothing methods'

[4] De Livera, Hyndman. & Snyder, 2011, 'A state space framework for automatic forecasting using exponential smoothing methods'

Generalized additive models

The trend model

Nonlinear Saturating growth

Linear trend with Changepoints

Automatic changepoint selection

The seasonal model

Fourier series

"Holidays and Events"

Stan model and fitting

Future work

Baysian models

L-BFGS

Marcov chain Monte Carlo

Further reading

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- The textbook for forecast R-package, but with a lot of theory and practice