Forecasting Service Metrics - Linear Regression

EP2420 Network Analytics

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Previously

Build a model

$$M(\theta) : x \rightarrow \hat{y}$$

by minimizing

$$\mathcal{L}(M(\theta, x^{(t)}), y^{(t)})$$

with respect to θ, given the samples $(x^{(t)}, y^{(t)})$ $t = 1, \ldots, m$

Objective

Build a model

$$M(\theta, h, l) : [x_{-l}, \ldots, x_0] \rightarrow [\hat{y}_0, \ldots, \hat{y}_h]$$

by minimizing

$$\mathcal{L}(M(\theta, x^{(t)}), y^{(t)})$$

with respect to θ, given the samples $(x^{(t)}, y^{(t)})$ $t = 1, \ldots, m$

Transforming Dataset

1. Standardize by column
2. Remove outliers
3. Tree-based feature selection, to extract top 16 features
4. Generate pairs of sequences $([x^{(t-l)}, , x^{(t)}], [y^{(t)}, \ldots, y^{(t+h)}])$

Linear Regressors

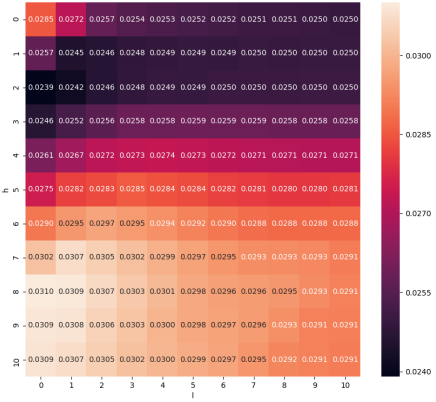

Figure: Heat-map of NMAE for each Linear Regressor with $l \in \{0, \ldots, 10\}$ when predicting $y^{(t+h)}$