

Feature generation for classification and forecasting problems

Petr Babkin

Moscow Institute of Physics and Technology

Course: My first scientific paper
(Strijov's practice)/Group 874

Expert: I. F. Anny

Consultant: I. O. Gordeos

2023

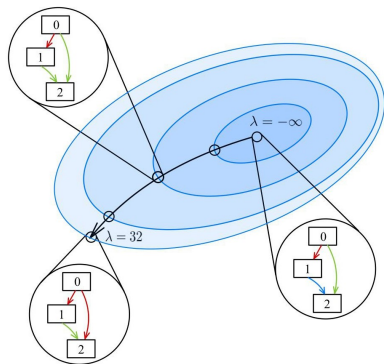
Goal of research

..

Problem of creating NN ensembles

Method:

1. find optimal architecture
2. sample architectures similar to optimal
3. give answer as equal voting



Problem of sampling new models for ensemble:

$$\begin{aligned} \min_{\alpha} \mathbb{E}_{\lambda \sim U(0, \Lambda)} [\mathcal{L}_{val}(w^*, \alpha(\lambda)) - \lambda JS(\alpha^*, \alpha(\lambda))] \\ \text{s.t. } w^* = \arg \min_w \mathbb{E}_{\lambda \sim U(0, \Lambda)} [\mathcal{L}_{train}(w, \alpha(\lambda))] \end{aligned}$$

Problem statement

..

Solution

Column 1

Column 2

Computational experiment

..

Conclusion

Forecast with hierarchical aggregation of

- ▶ types of freight in
- ▶ stations, regions, and roads,
- ▶ for a day, week, month, and quarter.