Citizen science for traffic monitoring: Investigating the potentials for complementing traffic counters with crowdsourced data
Descriptions of the best regression models

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This document is supplementing the paper *Citizen science for traffic monitoring: Investigating the potentials for complementing traffic counters with crowdsourced data* with a more detailed description of the best performing models together with their parameters. In each of the observed road segments either kernel ridge regression (krr) or gradient boosting regression (gbr) yields the best results. All the models were implemented using the scikit-learn Python library [1]. The details of the implementations of the kernel ridge regression together with the description of its parameters are available here. The details of the implementations of the gradient boosting regression together with the description of its parameters are available here.

Dunajska (from centre)

Summary

- Model: krr
- Features: basic, 0656-1, 0655-2

Model parameters

- alpha = 0.001
- coef0 = 1
- degree = 3
- gamma = 0.001
- kernel = chi2

Dunajska (to centre)

Summary

- Model: krr
- Features: basic, 0656-2, 0655-1

Model parameters

- alpha = 0.001
- coef0 = 1
- degree = 3
- gamma = 0.001
- kernel = chi2

Ižanska (from centre)

Summary

- Model: krr
- Features: basic, 0820-1, 1506-1

Model parameters

- alpha = 0.0001
- coef0 = 1
- degree = 3
- gamma = 0.001
- kernel = chi2

Ižanska (to centre)

Summary

- Model: krr
- Features: basic, 0820-2, 1506-2

Model parameters

- alpha = 1e-05
- coef0 = 1
- degree = 3
- gamma = 0.001
- kernel = chi2

Slovenska (from centre)

Summary

- Model: krr
- Features: basic, 0619-1

Model parameters

- alpha = 1.0
- coef0 = 1
- degree = 3
- gamma = 0.1
- kernel = chi2

Slovenska (to centre)

Summary

- Model: krr
- Features: basic, 0619-2

Model parameters

- alpha = 0.0001
- coef0 = 1
- degree = 3
- gamma = 0.01
- kernel = chi2

Škofije (towards Koper)

Summary

- Model: gbr
- Features: basic, 1092-1

Model parameters

- alpha = 0.9
- ccp_alpha = 0.0
- criterion = friedman_mse
- learning_rate = 0.1
- loss = squared_error
- max_depth = 3
- min_impurity_decrease = 0.0
- min_samples_leaf = 1
- min_samples_split = 2
- min_weight_fraction_leaf = 0.0
- n_estimators = 100

- subsample = 1.0
- tol = 0.0001
- validation_fraction = 0.1
- verbose = 0
- warm_start = False

Škofije (towards Trieste)

Summary

- Model: krr
- Features: basic, 1092-2

Model parameters

- alpha = 0.0001
- coef0 = 1
- degree = 3
- gamma = 0.01
- kernel = chi2

References

[1] F. Pedregosa, G. Varoquaux, A. Gramfort, V. Michel, B. Thirion, O. Grisel, M. Blondel, P. Prettenhofer, R. Weiss, V. Dubourg, J. Vanderplas, A. Passos, D. Cournapeau, M. Brucher, M. Perrot, and E. Duchesnay, "Scikit-learn: Machine learning in Python," *Journal of Machine Learning Research*, vol. 12, pp. 2825–2830, 2011.