Abstract

In this paper, the concept of kernel ensemble regression scheme is enhanced considering the absorption of multiple kernel regressors into a unified ensemble regression framework simultaneously and coupled by minimizing total loss of ensembles in Reproducing kernel Hilbert Space. By this, one kernel regressor with more accurate fitting precession on data can automatically obtain bigger weight, which leads to a better overall ensemble performance. Comparing several single and ensemble regression methods such as Gradient Boosting, Support Vector Regression, Ridge Regression, Tree Regression and Random Forest with our proposed method, the experimental results of the proposed model indicates the highest performances in terms with regression and classification tasks using several UCI dataset.

References

1. h49, author=Wornyo, Dickson Keddy and Shen, Xiang-Jun and Dong, Yong and Wang,
Liangjun and Huang, Shu-Cheng, journal=World Wide Web, pages=1–18, year=2018, publisher=Springer.


18. Jiajun Liu, Shuo Shang, Kai Zheng, and Ji-Rong Wen. Multiview ensemble learning for
dementia diagnosis from neuroimaging: an artificial neural network approach. Neurocomputing,
parameters influencing seismic performance of bridges using lasso regression. Earthquake
20. Santosh Singh Rathore and Sandeep Kumar. A decision tree regression based
approach for the number of software faults prediction. ACM SIGSOFT Software Engineering
multivariate linear regression models for reaction development. Chemical science,
22. Bernhard Sch¨olkopf, Alexander J Smola, Francis Bach, et al. Learning with kernels:
23. Ingo Steinwart, Don Hush, and Clint Scovel. An explicit description of the reproducing
kernel hilbert spaces of gaussian rbf kernels. IEEE Transactions on Information Theory,
24. Shengzheng Wang, Baoxian Ji, Jiansen Zhao, Wei Liu, and Tie Xu. Predicting ship fuel
consumption based on lasso regression. Transportation Research Part D: Transport and
25. YaozhengWang, Dawei Feng, Dongsheng Li, Xinyuan Chen, Yunxiang Zhao, and Xin
Niu. A mobile recommendation system based on logistic regression and gradient boosting
26. Hongyan Wu, Yunpeng Cai, Yongsheng Wu, Ren Zhong, Qi Li, Jing Zheng, Denan Lin,
and Ye Li. Time series analysis of weekly influenza-like illness rate using a one-year period of
27. Junbo Zhang, Zejing Wang, Xiangtian Zheng, Lin Guan, and CY Chung. Locally
weighted ridge regression for power system online sensitivity identification considering data

Index Terms

Computer Science

Information Sciences

Keywords

Ensemble regression, Multi-kernel learning, Kernel regression