

Project Title: DemandEst-AI powered Food Demand Forecaster

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Literature Survey

The major task that one would face in this will be predicting the quantity of products to be bought and prepared. It is very difficult to predict the number of orders in a given restaurant on a given day. A wrong prediction may end up purchasing and preparing less amount of food which will cause shortage or purchasing and preparing more which will lead to wastage of food. So, predicting the exact demand is a challenge because of uncertainty and fluctuations in consumer demand [1]. Q. Yu, M. Anzawa, S. Amano, K. Aizawa, "Personalized Food Image Classifier Considering Time-Dependent and Item-Dependent Food Distribution," IEICE Transactions on Information and Systems, November 2019 [2]. Lasso regression could also be a kind of linear regression that uses shrinkage. Shrinkage is where data values are shrunk towards a central point, a bit like the mean [5]. The lasso procedure encourages simple, sparse models [5]. This particular kind of regression is well-suited once we would like to automate certain parts of model selection, like variable selection/parameter elimination. It is a way which may be used for both classification and regression and deploys multiple decision trees to construct a forest and accumulates all the training results from each tree. It works well with both linear also as non-linear data, hence it relies on number of decision trees and uses mean prediction for the ultimate value [6]. SVM may be a popular technique used for classification and builds a hyper plane to extract the data patterns. For SVM model to possess high accuracy, the training data must have top quality and relevant features, otherwise the performance would be very poor and would end in low accuracy [7]. It is a recently new technique in field of machine learning which is predicted on the thought of gradient boosting. It uses decision tree method to supply high performance with very less computation time, leading to better performances with real data [8].

REFERENCES:

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- [2] In this proposed a time-dependent food distribution model and a weight optimisation algorithm aimed at adapting the user's data to their eating habits. Deep learning has also been imposed in the waste sorting process to automate some of the waste handling tasks
- [3] Bohdan M. Pavlyshenko, "Machine-Learning Models for Sales Time Series Forecasting", 2018 IEEE Second International Conference on Data Stream Mining & Processing (DSMP), Lviv, Ukraine, 21–25 August 2018.
- [4] İrem İşlek and Şule Gündüz Öğüdücü, "A Retail Demand Forecasting Model Based on Data Mining Techniques".
- [5] <https://statisticsshowto.com/lasso/regression>
- [6] https://en.wikipedia.org/wiki/Random_forest
- [7] <https://towardsdatascience.com/supportvectormachines-svm-c9ef22815589>
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