**LITERATURE SURVEY**

**DemandEst - AI Powered Food Demand Forecaster**

**FINDING FOOD DEMAND PREDICTION USING MACHINE LEARNING**

**Abstract**

Demand forecasting is the process in which historical data is used to estimate the quantity of product customer will purchase. This prediction activity is used in many fields like retailing, food industry etc. In Restaurants, prediction play a vital role as most of the basic ingredients have short-shelf life. The demands depend upon many explicit and hidden context such as season, region etc. In this paper, number of order is used to forecast stock of items, using machine learning with internal and external data. In this we provide an appropriate algorithm for demand forecasting which is capable of overpowering the wastage of short life items. Proposed algorithm like Bayesian Linear Regression, LASSO, XGBoost algorithm are used that considerably improves the forecasting performance.

**Forecasting Method**

In this research, the number of customers is forecasted using machine learning and statistical analysis method with internal data and external data in the ubiquitous environment. Bayesian Linear Regression, Boosted Decision Tree Regression, and Decision Forest Regression are used for machine learning, Stepwise method is used for statistical analysis method. We used Jupyter Notebook as a machine learning tool.

**Linear Regression**

It is way technique which uses a Bayesian network for the aim of machine learning. We formulate linear regression using probability distributions instead of point estimates. The anticipated value of the variable is completed by the very best probability value of distribution of unobserved variables against observed variables. The conditional dependencies are often expressed in sort of a graph or data structure using this probabilistic model. It’s mainly defined by three variables: conditional probability, variate variable and conditional dependency condition between random variables.

**Bayesian Linear Regression**

Bayesian Linear Regression (Bayesian) may be a method of applying Bayesian network to machine learning. The Bayesian network may be a probabilistic model during which conditional dependencies among multiple random variables are expressed employing a graph structure and dependency relationships between random variables are expressed by conditional probabilities . The Bayesiannetwork is defined by three variables: variate variable, conditional dependency condition between random variables, and conditional probability . By using the Bayesian network, the probability distribution of unobserved variables is calculated using observed some variables and therefore the value with the very best probability value is obtained because the predicted value of that variable

**Random Forest**

It is a way which may be used for both classification and regression and deploys multiple decision tress 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 **Support Vector Machine (SVM)**

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 . Users can complete the training tasks on non-linear distributions of coaching data by changing the kernel function of SVM.