



EFFECTIVE PRODUCT DEMAND FORECASTING USING ML

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Abstract: In order to predict the sales of their goods and services, organisations must analyse the daily sales data. By using this forecasting, manufacturers can raise product output to keep up with demand or make necessary adjustments to boost sales. With the help of the data science techniques Nave Bayesian classifier and KNN Classifier, this research introduces a fresh approach to sales forecasting. In order to demonstrate the effectiveness of the suggested mechanism, experiments are conducted utilising sales data from prior years gathered from numerous stores situated in various cities. The best algorithm will be determined by comparing the two. We used datasets from both feature phones and smart phones in the suggested method.

Keywords: Product, forecasting, demand, classifier, ML techniques

I. INTRODUCTION

We have many systems for businesses, including ones that help them keep track of their inventory, sales reports, employee information, and so forth. However, these systems only help the business entities keep track of what they are doing and do not extract any information that could be used to increase their profits. There are currently no automated technologies available that can forecast product demand prior to production.

The firm can execute data analysis on data and during the course of business with the help of business intelligence, which is a crucial component of an unavoidable decision support system. The main objective of any type of business is to maximise earnings. To achieve good revenues, careful preparation is necessary.

The market's raw sales data is first gathered for demand forecasting, and then the data is used to estimate future sales and product requests. The current method of identifying product demands is manual, which is time-consuming and costly. Predicting product demand is not automated right now. Promoting new items through advertising and manual research is a costly and dangerous approach.

Problem Statement

Finding the proper demand for the right goods before manufacturing is a crucial aspect of business for marketers and product manufacturers.

II. LITERATURE SURVEY

1. IEEE PAPER TITLE: Fashion Sales Forecasting With a Panel Data-Based Particle-Filter Model

YEAR OF PUBLICATION: 2015

AUTHORS: Shuyun Ren, Tsan-Ming Choi Member, IEEE, and Na Liu.

Description: In this paper, we propose and explore a novel panel data-based particle-filter (PDPF) model to conduct fashion sales forecasting. Using actual data gathered from the fashion sector, we assess the performance of the proposed model.

METHODOLOGY: PDPF model used for forecasting.

LIMITATIONS:

Only applied to fashion industries, not applied to other category of products.

Small Data-set used for prediction.

Less accurate results.

2. IEEE PAPER TITLE: Water Demand Prediction Using Support Vector Machine Regression.

YEAR OF PUBLICATION: 2019

AUTHORS: Amrita Tamang, Samiksha Shukla.

Description: For a nation to flourish economically and socially in a sustainable manner, water is a vital resource. Water demand forecast is essential for analysing the demands that point to a situation requiring immediate action for water management choices.

METHODOLOGY: Regression Method and support vector machine (SVM) is used for implementation.

LIMITATIONS:

These Regression and SVM techniques produces graphical outputs the distinguishing will be difficult in the graphical method.

Not suitable for real time application.

Less accurate results.

Very Small Data-sets used.

III. PROPOSED WORK

Figures must be numbered using Arabic numerals. The major objective of any organization is to get best profit and to satisfy the customers. The beating heart of each manufacturing process is, at its core, production planning. Its purpose is to minimize production time and costs, efficiently organize the use of resources and maximize efficiency in the workplace. Effectively utilize limited resources in the production of goods so as to satisfy customer demands and create a profit for investors is main goal of the production company.

Proposed system is an automation for sales forecasting in an organization. Proposed system predicts the sales of products for future based on the previous similar products sales data. Proposed system makes use of ML technique called "RF classifier" for the sales forecasting.

The major objective is to find the current scenario and future projection of a product in market. Forecasting is an important factor to improvise the business. System has 3 major objectives, finds present scenario, product update and change and future forecast of the products at a given inputs. We use 3 different data-sets to achieve these 3 objectives. ML techniques used to process data and to find the results. Efficient classifiers such as "k nearest neighbour" or "bayesian classifier" or "Random Forest" algorithms used for prediction. Proposed system helps business to know the current status of the product, any changes required and future updates. System build as application useful for the business. System build using "Visual Studio" as front end technology and "Sql Server" as back end technology.

IV. METHODOLOGY

DESCRIPTION

Step 1 : Raw data

We gather sales information in this phase of the product demand forecasting process. Sales information for electronic goods like basic and smart phones, which include features like processors, RAM, colours, main and secondary cameras, etc. The collection and processing of over 1000 data sets.

Step 2: Extrapolate and divide data (Data Preprocessing)

Here, sales data was analysed and only pertinent information was taken. Extracted and split into the various regions the data needed for processing. Because complete sales data is not necessary for processing and if we input all data, processing would take too long, necessary data extraction is performed.

Step 3: Train Data

After the necessary data has been retrieved and segmented, we must train the data, which entails turning it into the necessary format, such as numerical values, binary, strings, etc. Depending on the algorithm, conversion may occur.

V. CONCLUSION

A system called "Product Demand Forecasting" has been successfully developed, put through testing, and it satisfies all customer criteria. The system's design has as one of its main objectives the reduction and simplification of physical labour, and it has been successful in doing so.



FUTURE ENHANCEMENT

It allows for smooth processing and the storage of large amounts of data. Improvements to Come Future updates to the application can include the addition of an SMS module, which will allow businesses to be notified via SMS when anything important happens, like their registration being approved or rejected. In the future, we can improve the programme by including a visitor enquiry module that will allow users to send questions to the website's administrator. Customers can be added as actors in the application, and they can rate new products, with the corporation making manufacturing decisions in response to those evaluations.

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