

SYNOPSIS

Project Team No: 24SOCU2023

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Project Title: Comparative analysis of time series and machine learning models for sales forecasting

Name of the Guide: Dr. Devika R, Asst Professor II, School of Computing

Abstract

Although we are saying that the era, we are living in is now an artificial intelligence era, it has yet to make an impact on the ground level (i.e.) MSME sectors. The base paper that we selected has done sales forecasting using artificial neural networks using the famous "Big Mart" dataset. We as data analysts, wanted to analyze the data of a company that they found useful to be more efficient. So, we have decided to collect data from a chemical company situated in Erode. They're selling chemicals that are used as raw materials for many dyeing and processing industries. By analysing their data, we could find some valuable insights. Also, we have analyzed the temporal dependencies using LSTM and SARIMAX which makes the forecast more accurate. This was the main disadvantage of the implemented base paper. In the end, we could see that time series analysis is better than machine learning models. By providing accurate sales predictions, the company can optimize their inventory management, production planning and overall business strategy.

Specific Contribution

- Collected real time data set directly from the chemical company located in Erode.
- Performed extensive data cleaning and pre-processing to ensure the quality of the sales data for analysis.

Specific Learning

- Gained expertise in data cleaning and pre-processing methodologies for time series analysis.
- Understanding of data visualization techniques for identifying patterns in sales data.

Technical Limitations & Ethical Challenges Faced

- Ethical considerations were addressed throughout the project, ensuring data privacy and security for the collaborating company

Keywords: Linear Regression, Random Forest, Regression Tree, FCDNN, ELM, SHAP, LIME

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Date: 22.04.2024

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