

Forecasting with Ensemble Methods: An Application Using Fashion Retail Sales Data

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Summary



In this project, ensemble machine learning models are used to predict short term store sales of a fashion retailer.



Sales forecasts different stores are generated for a span of three months with random forest regressor and gradient boosting regressor algorithm.



Algorithms are trained and evaluated with real store based past sales data of a Turkish fashion retailer.

Literature Review on Forecasting Applied for Fashion Industry and Fashion Retail Sales (Theoretical & Academic)

Google Akademik

fashion retail forecasting with using machine learnin

Makaleler

Yaklaşık 26.900 sonuç bulundu (0,19 sn)

Tüm zamanlar

2023 yılından beri

2022 yılından beri

2019 yılından beri

Özel aralık...

Alakaya göre sırala

Tarihe göre sırala

Herhangi bir dil

Türkçe sayfalarda ara

Tüm türler

Makaleleri incele

☐ patentleri içer

☒ alıntıları

Exploring the **use of deep** neural networks for **sales forecastin retail**

ALD Loureiro, [VL Miguéis](#), [LFM Da Silva](#) - Decision Support Systems, 2018 - Elsevier

... **use of a deep learning** approach to **forecast sales in fashion** ... The **use of de** techniques for demand **forecasting** ... application of **deep learning algorithms** in :

☆ Kaydet [Alıntı yap](#) Alıntılanma sayısı: 200 İlgili makaleler 2 sürümün heç

Demand **forecasting** for multichannel **fashion retailers** by integ **and machine learning algorithms**

IF Chen, [CJ Lu](#) - Processes, 2021 - mdpi.com

... **fashion industry** and model construction. Therefore, this research proposes two **industry demand forecasting** ...) to meet the fast **fashion industry** needs of dem

☆ Kaydet [Alıntı yap](#) Alıntılanma sayısı: 16 İlgili makaleler 4 sürümün heç

Sales forecasting using extreme learning machine with applic **fashion retailing**

ZL Sun, TM Choi, KF Au, Y Yu - Decision support systems, 2008 - Elsevier

... In this paper, the ELM is selected to analyze **fashion sales forecasting** on the d ... model for the **fashion sales forecasting using extreme learning machine** (ELM

☆ Kaydet [Alıntı yap](#) Alıntılanma sayısı: 546 İlgili makaleler 7 sürümün heç

Literature Review on Forecasting Applied for Fashion Industry and Fashion Retail Sales (Theoretical & Academic)

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Literature Review on Forecasting Applied for Fashion Industry and Fashion Retail Sales (Practical)



Playground Code Competition

Store Item Demand Forecasting Challenge

Predict 3 months of item sales at different stores

Kaggle · 461 teams · 2 years ago

[Overview](#) [Data](#) [Notebooks](#) [Discussion](#) [Leaderboard](#) [Rules](#)

Overview

Description	Evaluation
	<p>This competition is provided as a way to explore different time series tech and clean dataset.</p> <p>You are given 5 years of store-item sales data, and asked to predict 3 months of item sales at 10 different stores.</p> <p>What's the best way to deal with seasonality? Should stores be modeled separately? Does deep learning work better than ARIMA? Can either beat xgboost?</p> <p>This is a great competition to explore different models and improve your skills.</p>

Notebooks

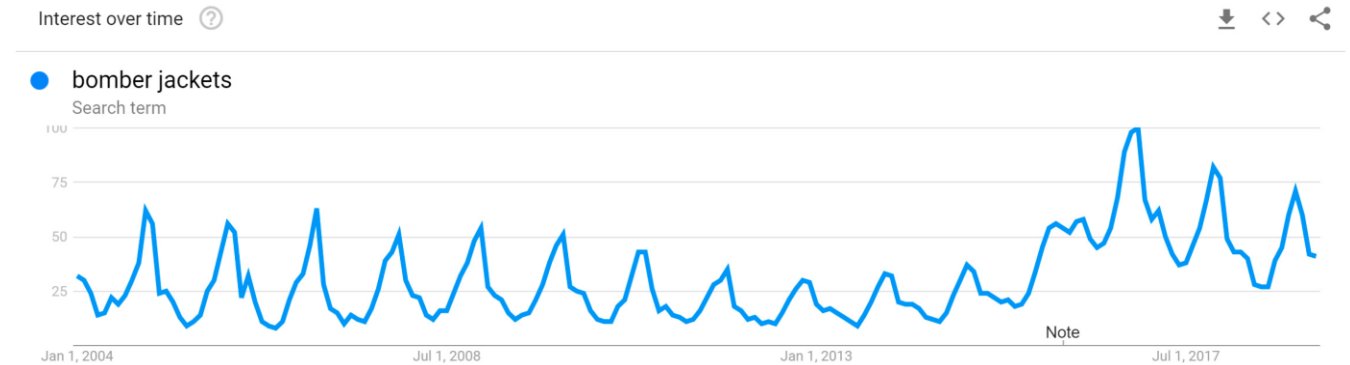
EDA+Prophet+ MLP Neural Network Forecasting
319 votes · 2 years ago

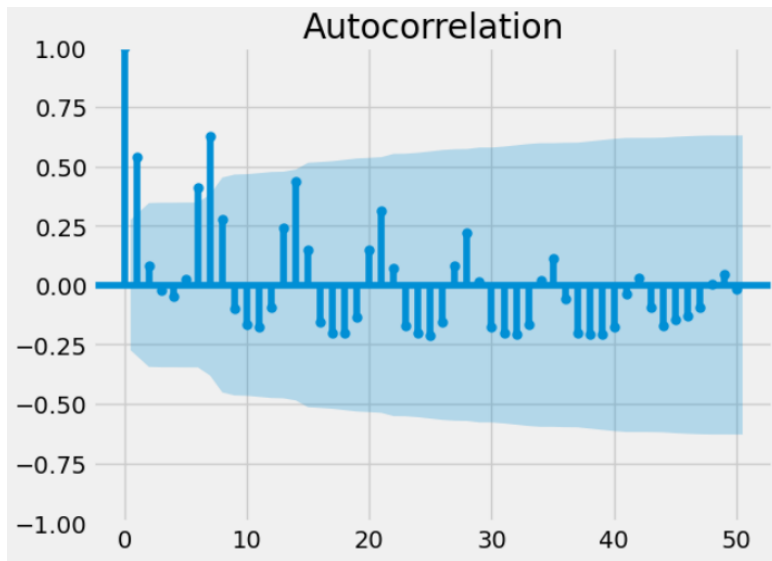
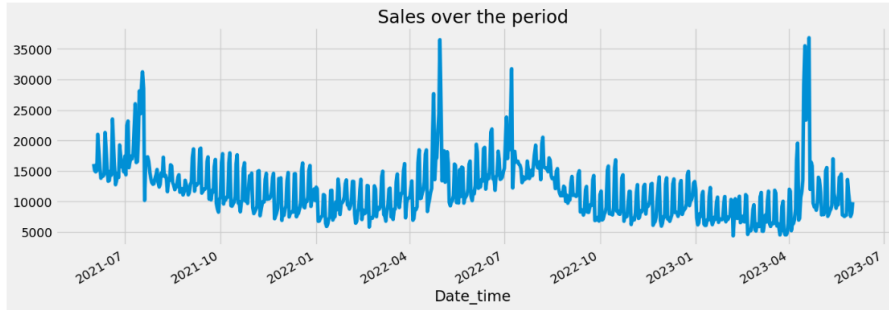
19 discussion topics

Deep learning RNN and Spark,
11 replies · a year ago

Data Retrieval

- Sales Data (From RDBMS)
- Past Weather (NOAA)
- Weather Forecast (scrapy or from API)
- Special Dates (calendar package)
- Google Trends (pytrends package)





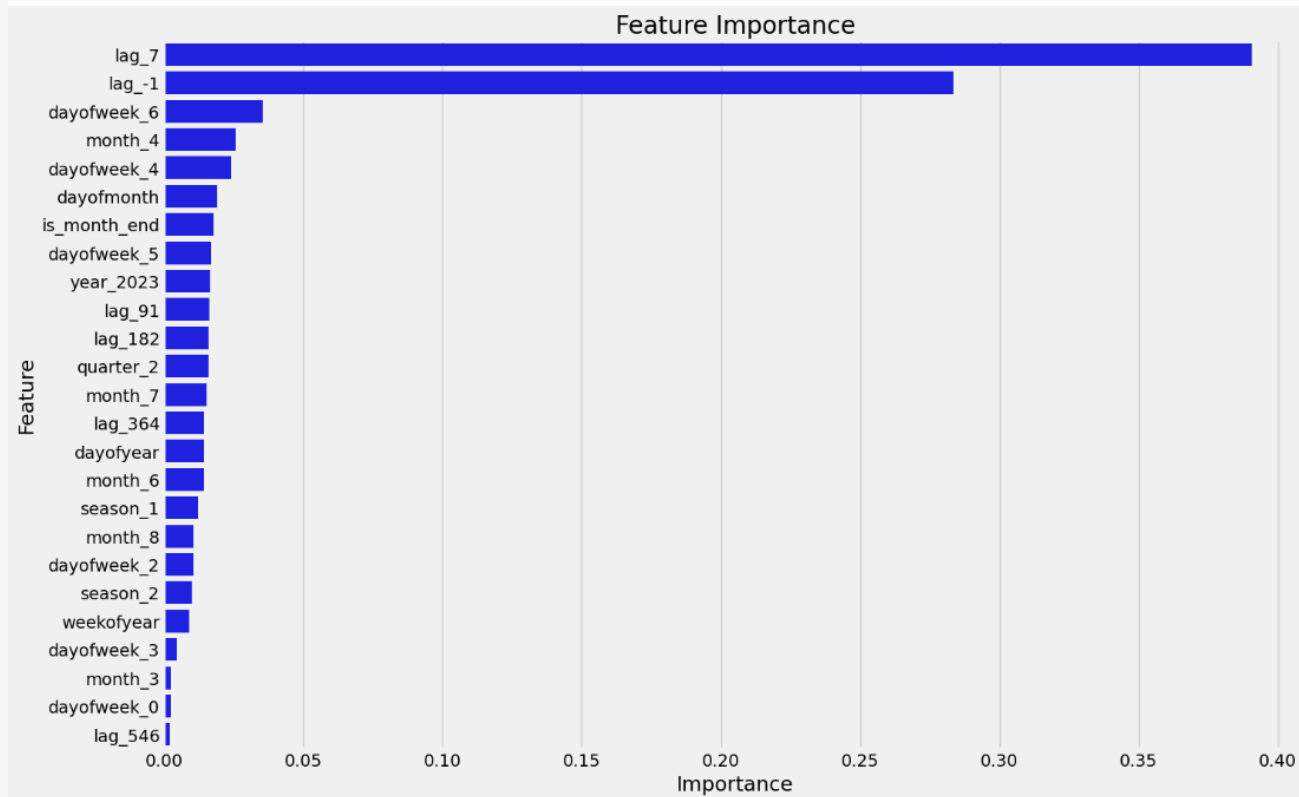
EDA

- To look for patterns in data
- For feature engineering
- For time series data: ACF, Line Charts

Feature Engineering

- Lagged Sales Features (from ACF plot sales of the same day from the week before last)
- Special Dates (such as Valentine's day, Republic Day (29 October))
- Geographic Features (city, country)
- Date Time Features:
 - Day of Week (1-7)
 - Day of Month (1-31)
 - Week of Year (1-52)
 - Month (1-12)
 - Weekend (0, 1)

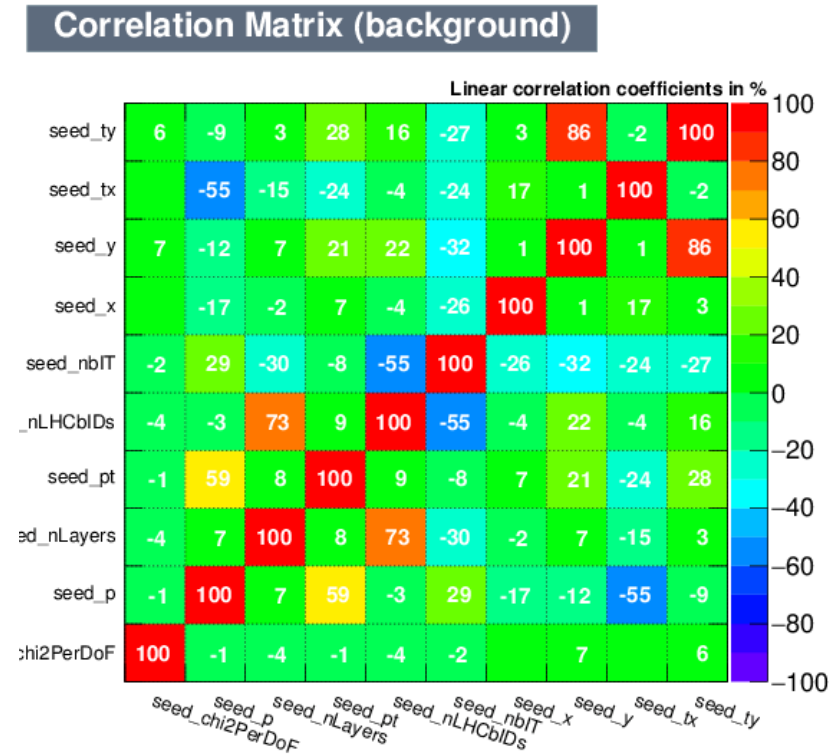
Feature Selection



- Feature Importance
 - Feature Importance refers to techniques that calculate a score for all the input features for a given model — the scores simply represent the “importance” of each feature. A higher score means that the specific feature will have a larger effect on the model that is being used to predict a certain variable.

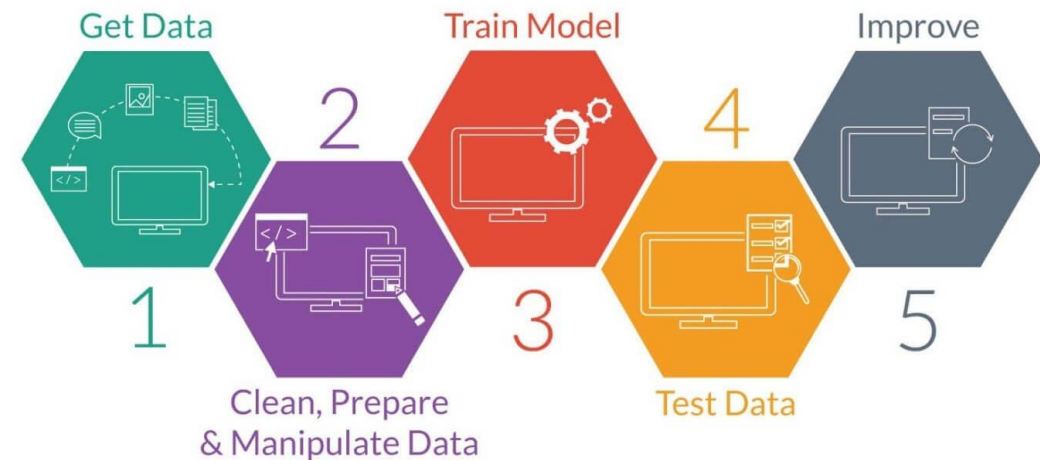
Feature Selection

- Scikit-Learn's Feature Selection Class (https://scikit-learn.org/stable/modules/feature_selection.html)
- Removing Features with low variance:**
VarianceThreshold is a simple baseline approach to feature selection. It removes all features whose variance doesn't meet some threshold. By default, it removes all zero variance features
- Recursive Feature Elimination with an estimator:**
Given an external estimator that assigns weights to features (e.g., the coefficients of a linear model), recursive feature elimination (RFE) is to select features by recursively considering smaller and smaller sets of features.



Model Training

- Train-Validation-Test Split: No hyper-parameter tuning based on test Set
- Hyper-parameter's of model: From package documentation (scikitlearn, caret, lightgbm, xgboost, catboost, ngboost, tensorflow)
- Hyper-parameter tuning:
 - RandomizedSearch
 - GridSearch



Evaluating Results

- Metrics to compare different Models & Settings: RMSE, WMAPE, MAPE, MSE
- Visualizing Results:
 - Scatter Plots (y-test vs y-pred)
 - Residual/Error Plots (error vs y-test)

