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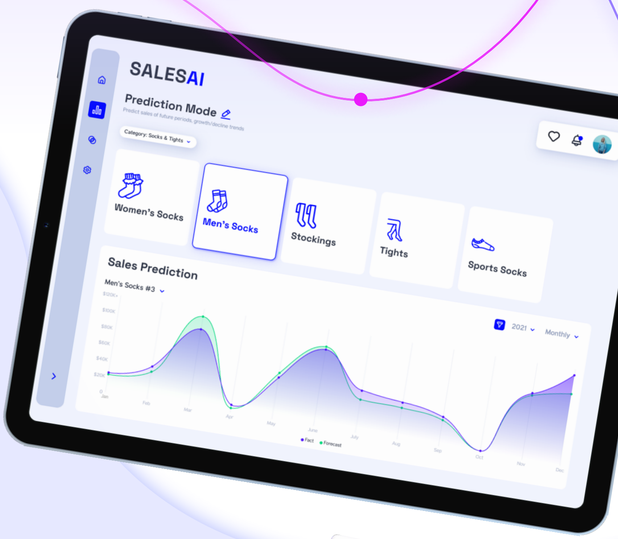
SalesAI

E-COMMERCE

The module that is based on machine learning algorithms predicts sales of future periods, growth/decline trends for certain groups of goods.

#Recurrent neural networks #ARIMA #ARCH

#Time Series Model

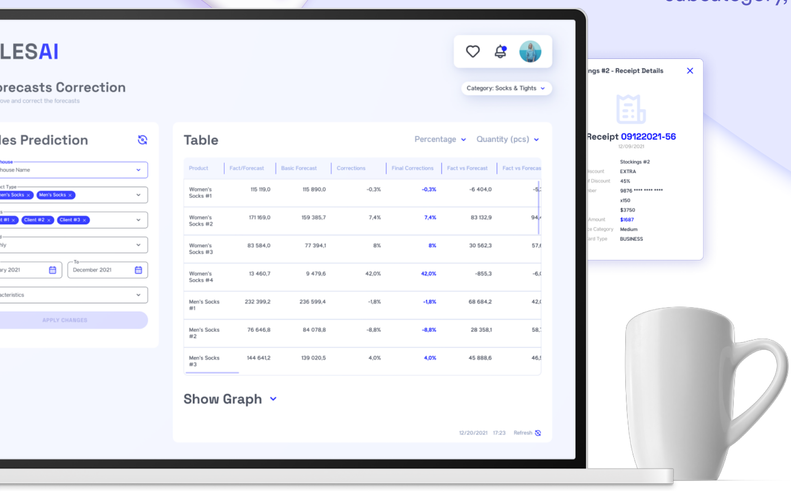


Business Case

The store assortment has a certain value for categories and subcategories of goods. It was required to make a prediction of sales for each subcategory over a period of 3 months.

Initial Information

- Daily sales for the certain period (date, product, product group, product balance at the end of the day, number of sales)
- Content of Receipts (daily for the period): receipt, date, product, type of discount, percent of discount, card number, quantity, amount, discount amount, retail price category, type of loyalty card
- Description of goods and product categories product, product name, brand product group, subcategory, supplier



TECHNICAL IMPLEMENTATION

Solution & Functionality

The dataset with the time series of sales by product subcategories was prepared based on the initial dataset. Various approaches to forecasting time series have been tested for modeling purposes: ARIMA, ARCH, recurrent neural networks, etc.

At each step, the symmetric mean absolute percentage error (SMAPE) based on model predictions and actual sales over the last 3 months was calculated. As a result, the decision to use an additive regression model was made.

Seasonality of demand for goods was identified for each subgroup:

- Annual
- Monthly
- Weekly

In addition to that:

- The trend per each product group was determined
- Weekly sales forecasts for a tree-month range were made
- Prediction accuracy for 75% of sales comprised over 85% (SMAPE)