

SUCCESS STORY



MACHINE LEARNING-POWERED PRODUCT CATEGORIZATION TO INCREASE CONVERSION RATES

PROJECT OVERVIEW

Similar to any other online shop, product categorization is a crucial feature needed to provide text-based and text-free searches, suggestions, and up-selling.

Although the client could categorise items on a retailer's website, it was having unsolvable problems across several websites.

The accuracy of the listings on the client's website was improved by Indium Software's "name matching" model, which overcame these challenges by utilising its experience in advanced machine learning and artificial intelligence.

SOLUTION DELIVERED

Advanced Analytics AI & ML

CLIENT DOMAIN

eCommerce

KEY HIGHLIGHTS

- The product categorization model achieved 75% accuracy in classification.
- Experience a 3% conversion rate boost across all product categories, resulting in a 20% increase in GMV.

ABOUT CLIENT

The client owns an AI-powered e-commerce aggregator that delights customers by giving them intelligent purchasing options.

BUSINESS CHALLENGES

The product categorization will always work well on retailer websites, but on the other hand it's an issue for e-commerce aggregators as the product categories are defined differently by different retailers for the same product. This creates a problem in assigning the same product from different retailers to the same categories, which leads to a decline in the quality of search results and user experience.

There was a need for advanced machine learning and artificial intelligence techniques to be deployed to solve some of the most complex problems the industry faces. In particular, this case focuses on how we addressed the persistent issue of product categorization.

SOLUTION HIGHLIGHTS

Product categorization is essential for e-commerce websites since it speeds up free-text searches and improves user experience by putting the most popular categories up front.

The process's several steps are outlined below, along with the techniques employed at each stage:

Data Sampling

- To ensure that each category is fairly represented.

Planned approaches: Random Sampling with Stratification.

Pre-Processing Phase

- Create a numeric representation of text.
- TF-IDF, N grammes, Stop words, and stemming lemmatization were the techniques utilised.

Model Training

- Fit training data to classification models.
- Support vector machines and Naive Bayes models.

Phase of Parameter Tuning

- Locate the model parameters that provide the most accuracy.
- Cross Validation and Grid Search (Scikit-Learn).

Phase of Model Nesting

- Separate models should be developed for the various levels of hierarchical groups.
- Group By formulas, for-loops, and sub setting.

Production

- Setting up the necessary infrastructure to use the trained model.
- JavaScript, Django, and pickling

BUSINESS IMPACT

- Model trained achieved an accuracy of 75% in accurately predicting categories for new products.
- Improved Product Categorization led to superior indexing of products which directly contributed towards providing better search results.
- 3% increase in Conversion rates across all Product Categories which led to a 20% increase in GMV.

TECH STACK



Jupyter Notebook (for prototyping)

Pickling using Django/ Flask
(for scaling and production)

ABOUT INDIUM

Indium Software is a fast-growing Digital Engineering company, focused on building modern solutions across Applications, Data, and Gaming for its clients. With deep expertise in next-gen offerings combining data and applications, Indium offers a wide range of services including Product Engineering, Low-Code development, Data Engineering, Ai/ML, Digital Assurance, and end-to-end Gaming services.



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