How a Machine Learning based prediction engine helped an Auto Insurance Company

Introduction

Artificial Intelligence (AI) & Machine Learning (ML) has shown potential to improve outcomes in several industry verticals. Some of the key benefits AI and ML bring to industries and organizations within these industries include enhancing efficiencies, improving cost structure, and optimizing the work environment. For data-driven organizations, AI and ML coupled with automation paves a way to save time needed for complex and repetitive tasks, to reduce human interventions in information processing to virtually negating human errors.

Customer background

- Our client is a service provider of AI/ ML expertise and digitalization solutions to online insurance platforms.

- Mudah (https://www.mudah.my) is one of the largest online marketplace platforms in Southeast Asia. Apart from selling properties, electronics, travel/ tour services, home, and personal care products it also sells vehicles on the marketplace.

- Under the vehicles category, it focuses on used cars, motorcycles, other vehicles along with car accessories and parts.

- The end-user, a vehicle insurance company needed to automate insurance premium computation for used vehicles that are bought from marketplace platforms like Mudah.

Requirements

- Automate search and collection of data for used vehicles, from the marketplace platforms like Mudah

- Pre-process & classify the data by vehicle make, year, odometer, drive, fuel, manufacturer, cylinders, dimensions.

- Build artificial intelligence-based prediction engine for car price estimation

- Integrate the predicted price-output data set with the existing depreciation model used by the insurance company

- Store the output in the database for creating data visualizations

- Aress assigned a team comprising of a data scientist and developers to work on designing and deploying a scalable architecture to leverage an automated AI/ ML solution to address the requirement

- The team leveraged the latest data scraping methods to scrape data from the website online sources

- Appropriate data cleaning, tagging, and classification techniques were used to help categorization of information

- Various predictive models were built and optimized to predict the price of vehicles including linear regression, ridge regression, Lasso, random forest, KNN & XGBoost.

- The model yielding the highest accuracy (Random Forest) was deployed as a part of the prediction engine and the predicted price for each vehicle was sourced into the depreciation model and displayed in visualizations.

Business Benefits

- The solution was designed in such a manner that it helped extract data for thousands of vehicles at a pre-set frequency in an automated manner, thereby eliminating human intervention and resulting errors.

- Integrating the prediction engine outcomes with the depreciation model made it easy for the vehicle insurance company with a faster turnaround on premium quotes, improving customer satisfaction.

- Resultant improvement in operational efficiencies and decision-making, enhanced insurance company's business prospects.

Process Overview

Source Website → Data Collection → Data Cleaning and Tagging → Data Classification Model

Visualization Model ← PostgreSQL Database ← Depreciation Model ← Car Price Prediction

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