Propensity US: Have Heart Disease

Tools to integrate, analyze, visualize, and deliver actionable insights in real time.

**Challenge**

As marketers are seeking privacy compliant options for customer engagement, especially in these times as Covid-19 is driving changes in consumer behavior, Prosper Insights & Analytics offers a solution to help advertisers and marketers create direct to consumer marketing campaigns in a cookie-less world.

**Solution**

Prosper’s pre-trained machine learning buyer propensity models offer a solution to generate improved marketing a privacy compliant way. These classification models are created and deployed in Amazon SageMaker with input from over 32,000 real pandemic consumers. They easily integrate with your customer data.

**Product overview**

Prosper Insights & Analytics is a consumer data and analytics company that is now using Amazon SageMaker built-in XGBoost algorithm to create consumer propensity models. Prosper’s approach to accessing their models on AWS Marketplace provides clients with the ability to enhance and enrich customer data in a privacy compliant way.

Prosper Insights & Analytics’ Propensity US: Have Heart Disease model predicts the probability that a U.S. adult consumer has heart disease. Based on a set of basic demographics, the model identifies individuals who are likely to have the health condition. The model was trained with data from Prosper’s large Media Behaviors & Influence (MBI) study (N=16,619).

**Product Features and Benefits**

- Enhances digital and offline targeting by identifying individuals likely to have a specific health condition.
- 100% Privacy Compliant Models. No PII Used. HIPAA compliant.
- Based on unique large sample consumer survey data (N=16,619)
- As the Covid-19 Pandemic is forcing changes in consumer behavior, Prosper’s Sagemaker model offerings improve personalization and offers by behavior propensities that are 100% privacy compliant with CCPA and HIPAA.
**How it works**

Sagemaker studio solves this challenge by providing all the tools needed to build train and deploy models with different algorithms, datasets, and parameters. In a few clicks, you can spin up a new machine learning model when launching Amazon Sagemaker Autopilot. Autopilot iteratively trains dozens of models at once and then puts the best sets on a leaderboard ranked by accuracy.

You can dive into any of these individual models and inspect their features and then deploy the best one for your use case with a single click. After deployment, you can oversee model quality using Amazon Sagemaker model monitor. At any point, if problems are detected, you will receive an alert so you can retrain the model as needed. With Amazon Sagemaker studio, you can pull the tools used in traditional software development such as debuggers and profilers into a single pane of glass to build train and deploy machine learning models at scale.
XGBoost Algorithm used to create the US Propensity Heart Disease model

The XGBoost (eXtreme Gradient Boosting) is a popular and efficient open-source implementation of the gradient boosted trees algorithm. Gradient boosting is a supervised learning algorithm that attempts to accurately predict a target variable by combining an ensemble of estimates from a set of simpler and weaker models.

The XGBoost algorithm performs well in machine learning competitions because of its robust handling of a variety of data types, relationships, distributions, and the variety of hyperparameters that you can fine-tune. You can use XGBoost for regression, classification (binary and multiclass), and ranking problems. You can use the new release of the XGBoost algorithm either as an Amazon SageMaker built-in algorithm or as a framework to run training scripts in your local environments.

This implementation has a smaller memory footprint, better logging, improved hyperparameter validation, and an expanded set of metrics than the original versions. It provides an XGBoost estimator that executes a training script in a managed XGBoost environment.

The current release of SageMaker XGBoost is based on the original XGBoost versions 0.90, 1.0, and 1.2.

Case Study

Use Case: Marketers seeking to find customers impacted by the Covid-19 pandemic drivers such as work from home, concern in public spaces, restaurants, stores, gyms, etc.

Solution: Deploy Sagemaker Models in real time via AWS. See Prosper models

Results: Improved marketing ROI. Lift over Random ranges from 1.20 to 3.43 times

Additional Resources

• Prosper Model Factory Overview
• Prosper Model Factory Catalog
• Prosper Insights and Analytics Healthcare Data

Solution available in AWS Marketplace