Integrated Machine Learning in Action

Seven examples of how Banks and Insurers are using machine learning with Earnix

Banking

Customer Data Enrichment & Analytical Boosting

Tree-based models (Random Forests, boosted trees using GBM, etc.) are very powerful for predicting behavior and imputing values. These machine learning models are quick to implement, more autonomous and are easily repeated. They have been used at one bank to impute missing values, in a case where data existed for only a portion of the customer population. In this example competitor price rates were predicted for all data points and were then used to explain and predict renewal and conversion decisions.

A similar use case where these techniques come in handy is when imputing values such as the size and duration of a loan in the initial computation stage of the offering, where these attributes are missing and are only documented for loans that are eventually booked or that are processed manually. These attributes have a direct impact on conversion of the loan, and using imputed data for these attributes during the online application process allows the bank to better predict expected conversion and profitability for each offer and consequently improve business performance.

Predicting Customer Product Choice

GLM models are commonly used to build retention models and predict reasonably well the customer decision of whether to renew a product. However, sometimes traditional GLM models might fail in accurately predicting the customer specific product choice, especially where there are multiple options for the customer to choose from. Using GBM we were able to accurately predict term and fee product choices post a renewal re-pricing of mortgages, allowing the bank to not only correctly predict renewal rates but also have a more accurate prediction of the specific product choice and transition between product pre and post the renewal. The ability to anticipate the correct product choice is important for financial planning as well as for tailoring effective retention plans & pricing strategies.

Small and Medium Enterprise Credit Offering

For a large European bank Machine Learning techniques are used to predict Small and Medium Enterprise (SME) customers product choice and utilization levels across an array of lending facilities. The objectives of the bank include gaining the ability to use pricing in order to influence customers' decisions to restructure short-term debt into medium- and long-term facilities. Using information on past product choice and utilization patterns, combined with detailed customer characteristics and credit history, ML models allow this organization to maximize earnings at the portfolio level and minimize negotiations efforts by the local relationship managers.

Insurance

Optimizing Competitive Rank on Aggregator Portals

Insurance pricing professionals can understand the optimal trade-off between volume and earnings at the individual level and understand exactly where a price quote should fall relative to other competitors on price comparison portals. This is done using random forest and gradient boosted models. Controlling this rank translates to moving the needle on policy demand across digital channels.

Lifestyle Program Customer Segmentation

Health Insurance companies work with Earnix to use machine learning algorithms to classify customers for lifestyle programs such as a "Frequent Fitness" program. This allows policyholders to opt-in to certain fitness programs to have their sports watch and wearable device data collected. The result is reduced premiums for more active health plan participants.

Predicting Mid-term Cancellation

American property and casualty insurance companies working with Earnix are using random forest models and gradient boosted trees to predict the mid-term cancellation rates of insurance policies. By understanding propensity for cancellation and having the ability to rank order customers, insurers can alter marketing and intervention programs, campaigns, and interactions accordingly.

Machine Learning in Actuarial Cost Prediction

The implementation of machine learning models in generating more granular prediction of actuarial cost, especially for high risk customers provides a competitive edge. The ability to identify risky customers more accurately will allow the company to better tailor its underwriting and pricing rules, and compete more effectively in the market. One of the main advantage of those techniques (Random Forest, Gradient Boosting, Deep-Learning, etc.) is that we are no longer restricted to only certain distributions that we must specify in advance.