ZAML | Zest Automated Machine Learning

Safely grow your lending business

ZAML™ allows you to increase approval rates by leveraging machine learning

Why traditional underwriting makes it hard to grow

Lending businesses need to grow revenue. In today's low interest rate environments, expanding lending is the primary path to revenue growth. Responsibly expanding approval rates to thin- and no-file borrowers is key to growing lending businesses. To grow lending requires solving one particular hard problem: Underwriting more consumers.

Most underwriting technology in use today does a good job of identifying creditworthy borrowers with an easily accessible credit history. But traditional underwriting hasn't changed in 50 years. This lack of innovation makes it challenging to identify millions of creditworthy borrowers.

Fifty years ago, most people with a credit bureau file had neither missing data nor errors in their file. This is no longer true. As many as 40% of Americans—including tens of millions of millennials—now have thin credit files, or no credit file. These applicants—whether they will be good credit risks or not—are neglected because they haven't amassed the extensive credit histories needed to fuel traditional underwriting models.

This problem is even worse in many emerging markets because the data needed for traditional underwriting doesn't exist in those markets. The result: Businesses are often reluctant to expand approvals to thin- and no-file borrowers, which in turn can restrict their growth to new markets.

ZestFinance's new approach to underwriting enables lenders to minimize credit losses while lending to thin-file and no-file applicants in the US and internationally.

How the Zest Automated Machine Learning (ZAML) platform can help

Scoring thin-file applicants effectively requires, not surprisingly, adding more data than that found in the credit bureau files. In fact, there are thousands of pieces of information on applicants both on the internet and in company internal databases. However, traditional underwriting is unable to process more than about 50 data points. This contradiction begs the question: What's next? How can I use that mass of data to help provide fair and transparent credit to applicants?

Machine learning (ML) is the answer. ML can help lenders responsibly increase approval rates in these previously hard-to-score populations by using all that data instead of the 50 or fewer data points traditional models use.

But ML is not magic. It's quite difficult to move from traditional underwriting methods. Upfront costs—in time and money—can be prohibitive for acquiring and preparing the necessary data and building the supporting ML infrastructure.

And even given the data, there is a dearth of data scientists who know the math and computer science that underpins ML. As a result, it's extremely hard to hire great, experienced talent.

In addition, ML models often function as "black boxes." One can see the model's output but can't explain what drove that output. This affects the lender and its regulators. The lack of transparency makes it hard for modelers to understand how to iterate and improve their models.

Even more importantly, the black box nature of ML models makes it impossible for lenders to provide legally required information to applicants—like adverse action— and to regulators—like disparate impact reports.

The ZAML platform was built to overcome these obstacles, in addition to providing world-class data handling and modeling environments.

First, ZAML makes it easy for data scientists to learn the math underpinning machine learning: ZAML makes good modelers into great ones and novice modelers into experienced ones quickly.

Second, ZAML provides extremely powerful explanation tools that make any black-box ML model transparent. The platform automatically generates dynamic reports to support modeler iteration. ZAML tells modelers what to focus on to improve and does much of the grunt work for them.

Finally, these same explanation tools allow the lender to provide adverse action in whatever format they choose to applicants. Disparate impact reports, using the regulators' approved techniques, are automatically generated.

ZestFinance developed ZAML—an end-to-end underwriting platform—over almost a person-century of experience lending to and scoring diverse customers segments. ZAML's ***data assimilation*** tools allow lenders to acquire, onboard, and prepare massive amounts of disparate data for modeling. This data can come from external sources. However, it often starts with additional internal data the lender has but can't use in underwriting. ZAML's ***modeling environment*** makes it easy for data scientists to train, ensemble and productionalize models extremely efficiently. Together these tools drastically lower the time and financial cost of ML adoption. And ZAML's ***explainability tools*** solve black box concerns, providing model insights to executives and tools to support analyses needed for compliance.

ZAML in action: Two examples of lenders who are safely increasing approval rates

ZAML facilitates the inclusion of hundreds or thousands of variables not used in traditional underwriting. With this additional data, the ML models built with ZAML can produce accurate credit decisions for previously hard-to-score borrowers, allowing lenders to safely approve additional borrowers without increasing risk.

*** JD.com**—China's second largest e-commerce company—built new ML models using ZAML that increased JD.com's approval rate by 150%.

The China credit bureau only covers about 20% of Chinese citizens. As a result, traditional underwriting can only approve a small fraction of applicants. This limitation on approval rate increases the per-loan marketing cost and makes it exceptionally difficult to grow a portfolio. JD.com used ZAML to increase its portfolio approval rate markedly. Key to this improvement was the ability to incorporate additional data into the new ML-based underwriting process. The joint JD-ZestFinance modeling team incorporated browsing data from applicants into the underwriting model. Additionally, the teams used ZAML to generate new features for the model, such as building submodels to verify an applicant's information based on the applicant's web browsing or order history. The resulting model allowed JD.com to safely extend installment loan offers to its shoppers, even those with no traditional credit data on file.

*** A top five U.S. credit card issuer** is using ML models built with ZAML to increase approvals by 9%, extending hundreds of millions of dollars in additional credit without increasing risk.

ZAML makes such gains possible by facilitating the use of hundreds of additional data points in its model build. This client's existing underwriting solution, based on a logistic regression model, employed a collection of variables from credit bureau data. But the client also possessed additional bureau variables, application data, and a collection of customer relationship management (CRM) data that was not incorporated in its traditional underwriting model. Working with ZestFinance's data scientists and using ZAML, this client was able to take volumes of raw CRM data for each applicant and generate a set of coherent features that could be used for modeling. For example, the team took monthly snapshots of credit bureau variables from the prior year and used it as trend data in the ML model.

Neither of these companies relied heavily on ML before working with ZAML. But they had capable and experienced data scientists and analysts that were able to harness the value of machine learning because ZAML endowed them with the right tools.

ZAML's data assimilation tools allowed the clients' data scientists and analysts to use a variety of disparate data sources and produce a clean, robust data set for modeling, with hundreds or thousands of variables for each applicant. The ZAML modeling tools enabled them to develop submodels and ensemble them into a single, integrated underwriting model. And finally, ZAML's explainability tools allowed them to unpack the model results in each case to understand what was driving the credit scoring. With these explainability tools, both clients were able to ensure that they continued to meet applicable regulations, including those for adverse action and disparate impact in the United States.

Grow your lending business with new math and more data

Machine learning requires both new math and more data. Often, that data already exists within an organization. ZAML allows lenders to use ML and new data—either from internal sources or a third party—to accurately score potential borrowers neglected by traditional underwriting methods. And it allows them to do so efficiently, cost-effectively, and compliantly.

To learn more about how ZAML can help your company safely increase approval rates to grow its business, contact us at partner@zestfinance.com or visit www.zestfinance.com.