

Machine learning and compliance? They can coexist.

ZAML™ explainability tools help lenders overcome black box concerns of using machine learning for underwriting

Why it's important to crack open the “black box”

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.

Machine learning (ML) can help. ML uses vast amounts of data to provide accurate, predictive analysis where traditional models fall short, allowing lenders to approve more borrowers or cut loss rates within their current borrowing population.

So why aren't more lenders using ML to underwrite credit? There are several reasons. Foremost among them is that ML models often function as “black boxes.” You can see the model's output, but you can't explain what drove that output. This lack of transparency makes it difficult for lenders to provide legally required information to applicants—such as adverse action. And it makes it hard to offer information regulators are required to have for disparate impact analysis.

The Zest Automated Machine Learning (ZAML) platform can help. ZAML's explainability tools offer insights into ML model behavior, overcoming black box concerns. ZestFinance has specifically tailored ZAML's explainability tools to address US financial regulatory concerns around adverse action and disparate impact. Moreover, ZAML is expressly designed to fit easily within your complex infrastructures and business processes.

How ZAML addresses adverse action concerns

Providing adverse action notifications to consumers whose applications for credit are denied is a key compliance concern for financial services companies. ZAML's explainability tools address this concern. Even with complex ML models that may use up to thousands of variables, ZAML identifies the primary factors driving applicants' scores.

ZAML's technology supports adverse action by allowing you to understand factors driving model denials for each individual applicant. Intuitively, this is simple. But it is computationally extremely difficult. Optimizations in the ZAML platform make it possible. Because of these optimizations, ZAML is able to produce a rank-ordered list of most important variables for each client that can be fed into the client's existing adverse action process.

ZAML produces simple, easy-to-read adverse action reasons. This is intentional. Despite the advanced math and technology underlying ML models, their results should be intuitive and comprehensible for business owners, customers and regulators alike. ZestFinance accomplishes this by working with you to map ZAML's rank-ordered list to existing adverse action reason codes. The result is a set of adverse action codes that feel familiar to your compliance staff and understandable for your applicants.



How ZAML can help with fair lending and disparate impact

Guarding against disparate impact in the underwriting process is an additional concern for financial service firms. And it's particularly hard for machine learning to do. ZAML addresses this as well through a disparate impact tool based on interagency Fair Lending guidance and industry best practices. ZAML's disparate impact tool can be used proactively during the model build process and for ongoing monitoring once models are in production.

ZAML's disparate impact approach starts by establishing proxies for protected classes using a variety of data sources. For instance, ZAML uses the Bayesian Improved Surname Geocoding (BISG) approach for race and ethnicity. The BISG approach is the industry standard for guarding against disparate impact, used by the Consumer Financial Protection Bureau (CFPB) and other agencies. In accordance with BISG, ZAML allows clients to estimate race and ethnicity. However, ZAML goes even farther, allowing estimation of other protected classes using only demographic data associated with surname and place of residence.

Based on these estimates, ZAML allows you to identify input variables that might cause your model to unintentionally discriminate against a protected class. Armed with these analyses, you may choose to make changes to your model based on the discretion of your business owners and compliance team.

Leverage cutting-edge machine learning *and* established frameworks for compliance

In ZAML, ZestFinance has combined elegant math and years of financial services experience to develop compliance tools that produce familiar, established outcomes for our clients. We consistently engage with regulators and influencers to ensure our solutions meet industry best practices. With ZAML's compliance tools, you can leverage cutting-edge ML techniques to unlock incremental value for your business while still using established frameworks to ensure you're operating fairly.

To learn more, contact us at partner@zestfinance.com or visit www.zestfinance.com.

