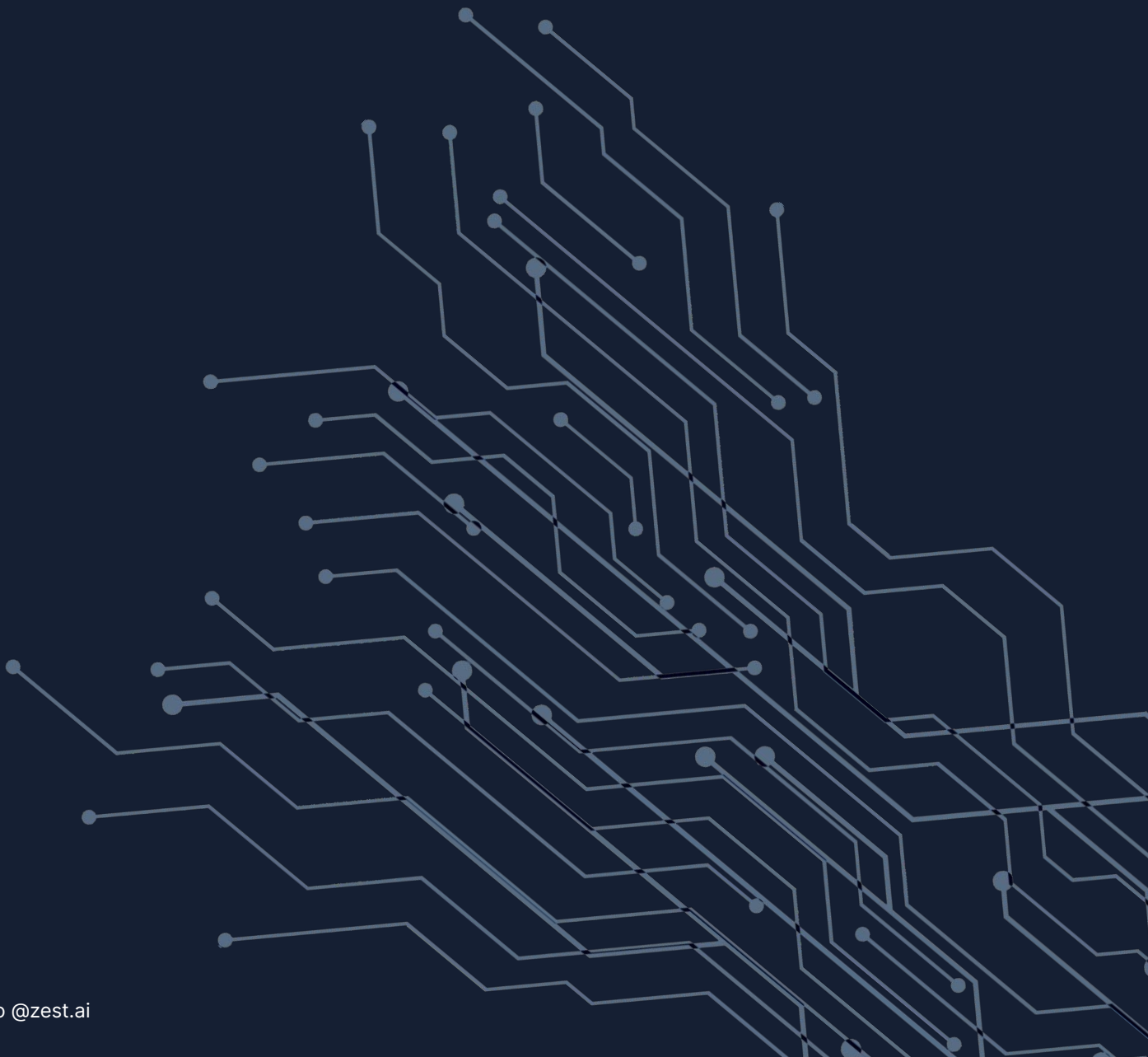# Zest Fairness

The New Way to Reduce Bias in AI

Making Credit Fair and Accessible to Everyone

The Zest Model Management System that automatically generates less discriminatory alternatives for any given credit model. That enables lenders to pick one that's optimized for maximum fairness and accuracy.

Identify fair lending risks.
Zest cracks open the 'black box' of machine learning algorithms. Understand how each variable- and the complex interactions between them- influence your credit model and gain confidence that they don't proxy for a protected class.

Optimize your credit model for fairness and accuracy.
Zest quickly identifies the credit signals driving disparity in your model and then takes advantage of cutting edge software tools to proactively reduce their influence. All without sacrificing performance.

Ease your compliance burden.
Zest lets you take advantage of a broad array of automated analysis and reporting tools. You'll be able to generate a model risk management report, a disparate impact fair lending analysis, and a key factors analysis for adverse action

Drive financial inclusion
Zest uses more data and better math to spot good borrowers other techniques overlook. That should help you satisfy your Equal Credit opportunity Act (ECOA), Fair Housing Act (FHA) and Community Reinvestment Act requirements.

A Better Approach to Model Fairness

	LEGACY METHODS	ZEST
APPROACH	Identify offending credit signals; then remove them one-by-one, each time re-running the model	Identify offending credit signals and then reduce their influence on the model without eliminating them
PROCESS	Manual	Machine Learning
SPEED	Weeks	1 day
RESULTS	Model is more fair but less accurate	Model is more fair and more accurate

Helping Your Fair Lending Team Achieve Game-Changing Results

Zest is trusted by the world's leading financial firms and deemed the "gold standard" by regulators to explain machine learning models and analyze their compliance with fair lending rules.

Perform fair lending testing on any model.
Zest supports fairness testing of linear models, machine learning models, and heterogeneous ensembles, including complex systems of algorithms that have been historically very difficult to analyze.

Create fairer models.
Zest generated less discriminatory alternative models (LDAs) give the business more options to improve fairness while maintaining predictive accuracy and downstream economics.

Operate more efficiently.
Zest automatically generates LDAs, reducing cycle times and thereby freeing up the team to analyze more models, faster.

Fair Lending Capabilities
Build a more accurate, fair credit model with Zest.

- Qualification of a feature's disparate impact versus predictive power
- Full transparency into applicant sore for model validation and comparison purposes
    - Feature importance
    - Partial dependence plots
    - Explained variance plots
- Automated generated of optimal LDAs
- Automated documentation of fair lending testing

That Works in Any Modeling Environment
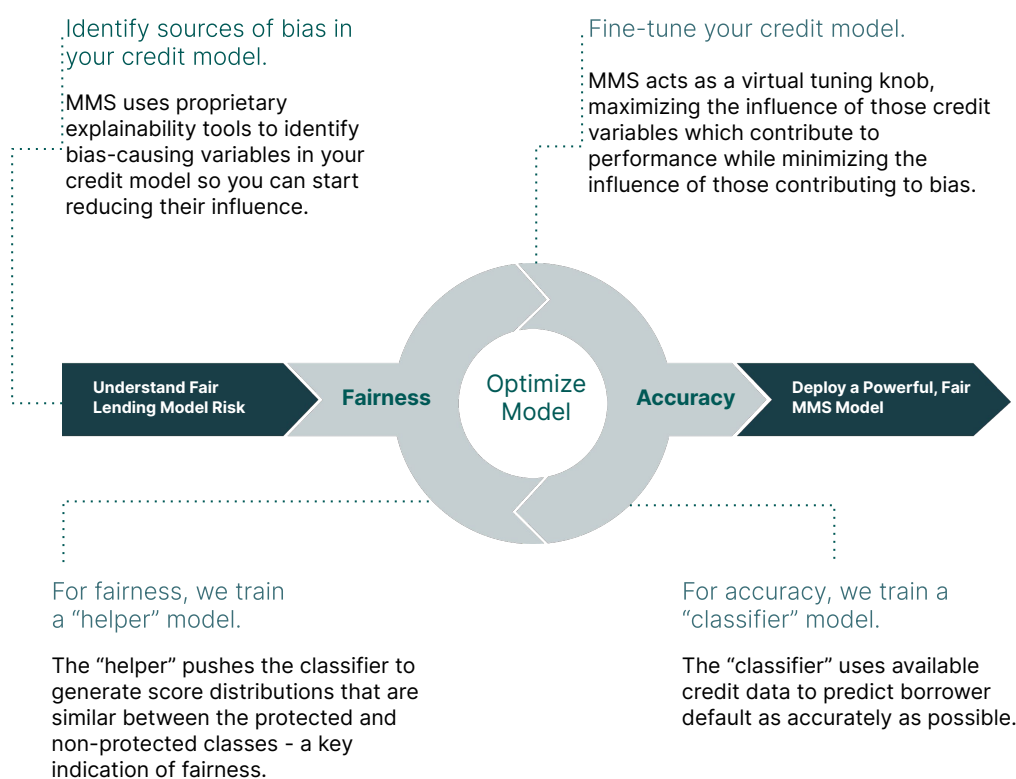Zest can be used to analyze a broad array of models- including complex systems of diver model types even when the models themselves are unavailable.

- Individual linear and logistic regression models
- Individual of machine learning models (e.g., neural networks, gradient boosted trees, random forests)
- Systems of linear and ML models, including ensembles of heterogeneous submodels

Increasing Fairness Without Sacrificing Accuracy

Zest's AI-powered algorithm automatically tunes down the impact of discriminatory credit data. That allows you to create fairer models quickly and without sacrificing accuracy.

Identify sources of bias in your credit model.

MMS uses proprietary explainability tools to identify bias-causing variables in your credit model so you can start reducing their influence.

Fine-tune your credit model.

MMS acts as a virtual tuning knob, maximizing the influence of those credit variables which contribute to performance while minimizing the influence of those contributing to bias.

Understand Fair Lending Model Risk → **Fairness** → **Optimize Model** → **Accuracy** → Deploy a Powerful, Fair MMS Model

For fairness, we train a "helper" model.

The "helper" pushes the classifier to generate score distributions that are similar between the protected and non-protected classes - a key indication of fairness.

For accuracy, we train a "classifier" model.

The "classifier" uses available credit data to predict borrower default as accurately as possible.

Expanding Economic Opportunity for Everyone

Zest is already helping financial institutions improve access to credit and increase financial inclusion. In fact, a recent pilot program from one large lender found that Zest would return these results.

51%
Reduction in mortgage approval rate gap between ispanic and White borrowers

40%
Reduction in even larger mortgage approval rate gap between Black and White Borrowers

172K
Additional minority families in new homes