By: **Miriam Moore**

# LEVERAGING MACHINE LEARNING FOR BETTER DEFAULT DECISIONS

## The potential for artificial intelligence to drive industry innovation isn't limited to the origination sector.

Hardly a week goes by without another report on how machine learning and AI will transform the way we work and live. AI's ability to digest huge amounts of data, identify patterns, and predict likely outcomes make them critical components in many areas including self-driving vehicles, breakthrough diagnostic tools, and personal recommendation engines. Not surprisingly, the mortgage industry is now turning to these advanced technologies to enhance the speed and precision of everyday decision-making.

Fannie Mae recently reported that 27% of lenders are currently using AI in some form and another 58% expect to use it shortly. To date, early-stage AI/machine learning efforts have primarily focused on enhancing origination, fraud/risk identification, and customer retention. But there are critical servicing functions that can benefit, as well, including the default life cycle and critical disposition paths.

Most industry observers agree—and a study by Fannie Mae supports—that the best way to reduce default losses is to avoid taking properties through conveyance or REO and instead dispose of them through other means as quickly as possible. However, this isn't always possible as evidenced by the number of properties that continue to convey or move to REO. According to ATTOM Data Solutions, more than 143,900 properties went into REO in 2019, a number that could grow exponentially in a default market.

When a property goes into default, the servicer's challenge is always, "What can be done to minimize losses?" This means determining the optimal disposition strategy for a property or a portfolio. For example: what are the best alternatives to taking the property through conveyance or REO? Is the Claims Without Conveyance of Title (CWCOT) route the best one, and what would have to be done prior to conveyance? Can or should it be sold in an online auction? Does it make sense for the servicer to hold the property, invest in repairs, and develop a marketing plan to list it?

Currently, servicers and their service providers are using limited historical information, time-consuming spreadsheets, and best practices to make these decisions. But what if machine learning and AI could provide faster, better answers?

## THE MACHINE "LEARNING PROCESS"

That was the challenge we gave our data scientists and technologists two years ago when we set out to build a revolutionary asset-decisioning tool that complements servicers' core operating systems and processes and provides a new opportunity for automation. The starting points were deciding how many models would be needed to produce the inputs behind the recommendations and what were the best data sources to "train" them.

Ultimately, technologists developed the models to solve complex problems that are critical inputs in the disposition decision process. The way machine learning works is that the models are fed massive amounts of data and taught to identify patterns so that they are able to predict certain outcomes.

In this case, the models were "trained" on historical operational data from our field services and title companies. In addition, leading property, neighborhood, and real estate databases were integrated into the training process.

Several of the models are designed to predict how a specific property will fare at third-party auction sale. One model gives a "yes or no" answer as to whether the property will sell at an online auction. Another looks at property and neighborhood characteristics and forecasts the timeline to sell, at a given price, in the CWCOT Second Chance program. What's the probability, for example, that this property in one particular ZIP code will sell online for Y dollars in one versus three weeks versus four? This model allows banks to understand timelines to sell at different price points and helps them develop more informed disposition and contribution strategies.

The next questions that the models answer are about the physical and title condition of the property. The remaining models predict and price for the problems that the servicer might eventually encounter and potentially have to remediate. They can be used with current title and field services information or simple basic data and property characteristics from the loan boarding process. For example, without an inspection, the models can forecast, in some cases with more than 90% accuracy, the likelihood a specific property will have certain outlier issues. These include mold, water damage, hazardous conditions, roof, or demolition issues. They then show the cost for repairs, ranging from minimum cost to maximum and provide a forecast and project timeline for conveyance back to HUD under CWCOT.

As new properties are run through the platform, the models, thanks to machine learning, will continue to improve and its recommendations will become even more accurate. In the end, the ultimate decisions will always rest with the servicer, not a machine, but these tools will aid in making better and informed decisions more quickly.

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