

Tradeswell Automates ML Pipeline with Amazon SageMaker for MLOps

tradeswell.

Executive Summary

[Tradeswell](#) is a digital platform that aggregates business critical data across the eCommerce stack and provides organizations a comprehensive view of their online business performance. Tradeswell also uses machine learning (ML) algorithms to generate actionable insights in real-time. Today, more than 350 brands use Tradeswell and achieve average net margin growth of over 20%.

Prior to engaging ClearScale, Tradeswell was running an ML pipeline in Amazon Web Services (AWS). However, the company wasn't taking full advantage of AWS' sophisticated AI/ML tools, including the ML development solution, Amazon SageMaker for MLOps. AWS Premier Consulting Partner ClearScale stepped in to help Tradeswell implement MLOps SageMaker architecture and related services to streamline the platform's model generation capabilities.

The Challenge

Tradeswell's engineering team was spending too much time on tasks related to IT infrastructure management and deployment. As a result, engineers couldn't invest as much as they wanted on the data science side of the application, which is where Tradeswell's application differentiates itself from the competition. Without a more streamlined approach to its ML pipeline, the platform couldn't grow efficiently or effectively.

As an expert in AWS with the Machine Learning and Data & Analytics Competencies, ClearScale was in the perfect position to meet Tradeswell's technical goals. ClearScale recommended that the retailer start using [Amazon SageMaker for MLOps](#) to automate multi-tenant ML model generation and create more capacity for in-house engineers. Tradeswell decided to move forward with ClearScale given the company's cloud expertise and experience specifically on the AWS platform.

The ClearScale Solution

ClearScale prepared an ML pipeline for Tradeswell that automatically transfers ML models between the development, training, and inference states. Engineers can initiate these transfers manually or as subject field changes. ClearScale also set up the pipeline to support two types of inferences - managed and custom. Managed models are prebuilt images provided by AWS that are available for platform users. Custom models work with custom Docker images that are created and uploaded to [Amazon Elastic Container Registry \(ECR\)](#).

ClearScale also added an orchestration capability to automate Tradeswell's ML pipeline execution flow. The team used [AWS Step Functions](#), a low-code visual workflow service, to create a generic, yet customizable pipeline. Tradeswell's ML pipeline now automatically executes the following steps:

- Naming preparation
- Data preparation
- Model packaging
- Model training
- Model deployment
- Inference generation
- Endpoint termination

The naming preparation and model packaging steps, specifically, give the pipeline flexibility. These steps contain nothing else but a command to run a lower-level state machine with an Amazon Resource Name identifier that is specified in the config file. Depending on the requirements, Tradeswell engineers can test different execution models in the same pipeline by only changing the config file. So, ClearScale was able to replace much of what Tradeswell was doing manually with a reliable workflow that leverages multiple AWS cloud solutions.

The Benefits

With ClearScale's support, Tradeswell was able to transform its highly manual ML pipeline and minimize how much effort it takes to prepare and deploy infrastructure to support the next generation of intelligence and insights for its users. The new pipeline allows the engineering team to focus more on improving algorithms and models so that eCommerce clients get as much value as possible from the platform. Plus, having a robust MLOps capability has reduced how much time Tradeswell spends on model development and testing, allowing the platform to get better models to market faster.

Looking ahead, Tradeswell now has the ML pipeline it needs to scale with demand without overburdening its engineering resources. This operational efficiency will be essential going forward as the eCommerce space continues to grow.