OCX Cognition™

AWS INNOVATE
AI Innovation Case Study

Accelerating Customer AI On Amazon Web Services

OCX Cognition is the maker of Customer AI, a B2B Software solution for Generative CX Analytics. Our breakthrough Customer AI platform, allows our customers to reduce customer risk, break down silos, and drive speedy action. Building on decades of CX-focused expertise, we've harnessed today's advances in AI, elastic computing, and data science to deliver on the promise of customer-driven financial results.

Building Customer AI

Customer AI is a next generation Generative CX Analytics platform for enterprise customers. The Platform combines customer attitudes with operational data and uses machine learning to generate continuous insight on CX. As such, we needed a PaaS partner that could provide a wide range of tools. To start, we needed a flexible, integrated platform with elastic computing that could grow along with our business. For development, we were looking for a machine environment that would keep pace with our evolving needs. AWS offered the right combination of elements for us in a single platform that makes integration and evolution easy to manage.

Scale and Acceleration

Our initial R&D focused on building and optimizing an ML solution that could reliably generate CX scores for a broad set of experiences as well as an overall Net Promoter Score. Our platform has to produce models that were tuned for hundreds of different generative CX scores at each customer, and these scores had to be uniquely computed for tens of thousands of active accounts listed by each. In order to scale our business, we needed to condense and accelerate the ML development process to accommodate more concurrent customers and a faster time to value. Multiple copies of the same code were causing redundancy and leading to a lot of manual effort. Our ML development involved multiple steps – feature engineering, model training, prediction, and the generation of analytics. The code for our modules resided in multiple notebooks, and the execution of these notebooks was manual with no orchestration tool in place. Typically, ML development was an iterative process and to achieve a good-performing model, multiple trials were necessary. As there was no automated way to track multiple models, it was leading to a lot of additional work by the development team.

Summary

OCX Cognition partnered with AWS from the outset of their Customer AI journey. This began with use of the AWS platform for fundamental research and development of core Customer AI services that use machine learning to generate CX scores like NPS® and CSAT predictively from operational data.

In order to effectively scale the software beyond proof of concept, the OCX Cognition team once again turned to the AWS platform and its experts to infrastructure design and support in the development of their next-generation solution.

AWS remains a critical infrastructure partner for OCX Cognition, with key ingredients of the AWS infrastructure used as building blocks for the declarative ML and AutoML capabilities that lie at the heart of its Customer AI software.

""…we knew we'd need to innovate to create our Customer AI software solution, and we chose AWS as a platform partner precisely because we knew their infrastructure and expertise would be there for us no matter what challenges we'd encounter on our journey…"

Brian Curry
Founder, Head of Products, OCX Cognition

Declarative ML for Customer AI

So, we turned our attention to automation and scale. We needed to move beyond individually developed solutions using code libraries to an automated and scalable solution that operated as a singular platform leveraging unique configurations for each of our customers. The answer was to focus on modularizing our software development and automating our ML operations. The intent was to improve our both our efficiencies and our results. In order to design and build a solution, we brought our ideas and needs to the AWS Architecture team for guidance and support. Working together, we identified a number of AWS platform and development components that could be leveraged to help us meet our development needs. Our code needed to be modularized to improve re-usability –as is consistent with long held best practices in software engineering.

It was our intention to apply this approach in the ML development process. Declarative programming is a proven technique used to bring abstraction to source code in conventional application development. The same approach needed to be adapted for ML. Traditionally model development was done using ML libraries but the use of these libraries requires repetitive low-level coding and expertise in ML. So we focused on the development of a custom 'declarative ML' framework was developed to replace all repetitive code.

Auto ML for CX Analytics

With the code developed and in place, our next focus was the automation of the ML development operations process including feature engineering, model training, and model deployment. During our initial R&D phase, these steps are executed manually and were labor intensive. Once the models were stabilized, they had to be deployed in our production environment. In today's solution, manual steps are automated to create stable and repeatable processes. The development of this AutoML system streamlines the ML cycle making it both faster and effective. To create our AutoML solution, we turned to elements available on the AWS platform including Sagemaker, AWS Step Functions and AWS Experiments.

Business Benefits of the Solution

With this approach we have automated and accelerated the entire ML processing on our platform. By replacing labor intensive manual processes and highly repetitive development burdens our cost per customer is significantly reduced. This also allows us to scale our software business by increasing our capacity overall and improving our capacity for simultaneous onboarding of customers. This unlocks new potential to grow through customer acquisition. For our customers, this new solution provides not only an improvement in ML performance, but a drastic improvement in time to value. New customer onboarding and the initial model generation has improved from 6 weeks to 2 weeks. Once built and in place, we begin to continuously re-generate the CX analytics as new input data arrives from the customer. These update cycles have improved from 4 days to near real time.

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