Cognizant®

Case Study: Communications, Media & Technology

Leading US media company automates efforts by 40%–50% using MLOps

An MLOps-based solution automates the pipeline and facilitates a shorter model build and deployment lifecycle while leveraging the existing investment of the customer.

The challenge

A leading media and entertainment company in the US was following a manual approach to move its machine-learning (ML) models from the data science team's local environment into a production environment. There were no standard processes, and this drove the need for a new automated pipeline.

The customer wanted to use its existing investment while building a future-ready MLOps solution so it could facilitate a shorter model build and deployment lifecycle. ML Ops solutions include practices that aim to deploy and maintain machine-learning models in production reliably and efficiently.

The solution

Cognizant leveraged its partnership with Amazon Web Services using AWS SageMaker and our MLOps accelerator to build a solution to orchestrate the deployment and prediction processes with a serverless function and a dynamic ML library and code commit repository.

Logging and monitoring

The solution used Amazon CloudWatch to enable model monitoring for Data Drift with a custom-built drift comparison dashboard and extensively captured logging and monitoring metrics throughout the execution of the MLOps pipeline. It sent an email alert for failure, with error step and success emails, for all the steps. The solution also had custom model monitoring for data drift and model health.

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Model building, training and serving

The solution enabled the continuous re-training of ML model using Amazon Sagemaker through MLOps pipeline and deployed a supervised and an un-supervised model through the MLOps pipeline with few successful production runs.

Movement to production

The solution leveraged a dynamic ML library and CodeCommit repository for a configuration file-driven, serverless architecture to deploy the ML models to production at scale. A CI/CD approach helped to automate the deployment of the finalized training model from development to UAT to production.

AWS Lambda triggered the AWS Airflow, which pushed the model artifacts to GitLab. The GitLab repository was completely integrated with the MLOps pipeline to move the artifacts to production.

Architectural attributes

The MLOps solution architecture was built in line with an AWS well designed framework and used best practices such as:

> Infrastructure/Configuration-as-a-code

> Serverless deployments

> CI-CD-CT

> Collaboration

> Source & Version Control

Comprehensive model and performance monitoring was used to build a truly differentiated prediction solution. Cognizant's MLOps accelerator automated the deployment of the finalized models from development to the production environment.

Business outcomes

Our scalable, AWS-powered MLOps solution reduces the time required for the deployment of a supervised and unsupervised ML model from the Data Scientist team development environment into production and we have completed successful production runs.

❚ The deployment across development, UAT and production environments happened in minutes with the finalized models and artifacts.

❚ Custom model monitoring metrics were defined and configured for data drift and model health. A continuous training pipeline was enabled to streamline model retraining at regular intervals.

❚ Our solution reduced the batch runtime from more than one hour to just 30 minutes and the automation cut efforts required by 40% to 50%.

About the client

The customer is an American integrated media and entertainment company primarily known for professional wrestling. It has also branched out into other fields, including movies, football and various other business ventures.

About the partnership

Cognizant engineers modern businesses to improve everyday life. Our unique industry-based, consultative approach helps clients transform technology, re-imagine processes and transform experiences ensuring businesses remain agile, relevant and ready to run more innovative and efficient enterprises.

With AWS as our partner, we focus on the outcomes that matter most to businesses and underpin our solutions with deep industry experience and market-leading IP. Cognizant brings more than 6,000 AWS certified professionals, dedicated AWS certified consultants in 43 countries, hundreds of customer launches and successes, and more than 70 transformational blueprints to drive innovation beyond cloud migration.

As a premier consulting partner, Cognizant hold numerous AWS competencies, including AWS Mainframe Migration, AWS SAP, AWS Migration, AWS Financial Services, AWS Healthcare, and AWS Life Sciences. Partner programs include AWS Well Architected, AWS Managed Service Provider, AWS Marketplace Seller, AWS Solution Provider Program, and AWS Public Sector Solution Provider.

About Cognizant

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 185 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at www.cognizant.com or follow us @Cognizant.

Cognizant

World Headquarters

300 Frank W. Burr Blvd.
Suite 36, 6th Floor
Teaneck, NJ 07666 USA
Phone: +1 201 801 0233
Fax: +1 201 801 0243
Toll Free: +1 888 937 3277

European Headquarters

1 Kingdom Street
Paddington Central
London W2 6BD England
Phone: +44 (0) 20 7297 7600
Fax: +44 (0) 20 7121 0102

India Operations Headquarters

#5/535 Old Mahabalipuram Road
Okkiyam Pettai, Thoraipakkam
Chennai, 600 096 India
Phone: +91 (0) 44 4209 6000
Fax: +91 (0) 44 4209 6060

APAC Headquarters

1 Changi Business Park Crescent
Plaza 8@CBP # 07-04/05/06
Tower A, Singapore 486025
Phone: + 65 6812 4051
Fax: + 65 6324 4051