

Reimagining **shipping** through machine learning and data science



HCLTech redesigned operating systems to improve predictability and CX for a global logistics provider

An American multinational delivery services company experienced significant challenges, including shipment delays, incorrect documentation, and customer dissatisfaction resulting from package content misclassification. To address these issues, the company sought an AI-based solution for predictive shipment classification and reducing delays. With HCLTech as their partner, the client sought to implement a strategic transformation exercise. This involved the establishment of a big data platform, automation of model testing and comparison, and the development of tools and processes to handle large volumes of text. The adoption of machine learning models resulted in reduced manual efforts, improved scalability on a global level, enhanced processing design, and decreased development time for new models.

The Challenge:

Logistic obstacles creating issues in growth trajectory

The delivery services company faced obstacles such as shipment delays, incorrect documentation, and customer dissatisfaction caused by package content misclassification. These challenges were

exacerbated by erroneous Harmonized Commodity Description and Coding System (HS) mappings, resulting in delays in freight delivery and a negative impact on customer experience.

The Objective:

Creating a roadmap to enhance operations and improve customer experience

The client's main objective was to implement an AI-based solution capable of proactively predicting shipment classification. By doing so, they aimed to reduce delays and enhance

customer satisfaction. Additionally, they sought to leverage an MLOps framework to automate the process of building, testing, deploying, and governing the AI solution.



The Solution:

Strategic solutions leveraging the powers of machine learning

HCLTech collaborated with the company to tackle the complexities within their shipment process through a strategic transformation exercise. The key components of the solution included:

Establishing a big data platform

We set up a robust big data platform capable of efficiently handling and processing large volumes of data. This platform served as the foundation for iterative learning and provided the necessary infrastructure for the AI solution.

Automation of model testing and comparison

To streamline the model testing and comparison process, we implemented automated workflows. This automation significantly improved efficiency and reduced the time required for evaluating and selecting the most effective models.

Model management and orchestration

We devised a comprehensive approach to model management and orchestration across multiple environments. By leveraging continuous integration and continuous deployment (CI/CD) pipelines, they ensured seamless deployment and monitoring of models. Furthermore, they established a Model-as-a-Service delivery strategy, enabling the exposure of machine learning models to different lines of business within the company.

Handling high volumes of text

Recognizing the importance of effectively processing text data, we developed and implemented tools, processes, and infrastructure specifically designed for managing substantial amounts of textual information. These enhancements significantly improved the accuracy and efficiency of classifying shipped items.

Building advanced models

We utilized a variety of advanced techniques such as semantic analysis, named entity recognition, ontologies, and topic modeling to construct robust machine learning models. These models played a crucial role in accurately classifying shipments, overcoming the limitations of rule-based systems.

Feature store implementation

To enhance team productivity and facilitate governance, we created a feature store. This feature store provided reusable features and ensured consistent governance practices throughout the AI solution development lifecycle.

The Impact:

Global scalability improved with reduced development time and improved CX

The implementation of machine learning models yielded several impactful outcomes:

Reduced manual efforts

By leveraging machine learning models, the company significantly reduced the need for manual classification of shipments that were not accurately mapped by rule-based systems. This automation improved efficiency and eliminated potential errors.

Global scalability

The solution progressed from the proof-of-concept stage to full production, operating seamlessly within a client-supported big data environment. This global scalability enabled the company to deliver consistent results and customer experiences across multiple regions.

Improved processing design

We provided high-performance processing design and components tailored to support real-time workflows. This optimization ensured that the AI solution could handle the demands of the company's operational processes efficiently.

Reduced development time

Through implementing entity profiling and data orchestration methodologies, the client significantly reduced the time required to develop new machine learning models.