



How LLM testing streamlined logistics for a global technology leader in connecting shippers and carriers

SUCCESS STORY

In today's dynamic logistics landscape, optimizing transportation outcomes is critical for both shippers and carriers. Our client, a global technology company, is at the forefront of this challenge. They leverage advanced digital platforms to connect shippers with the right transportation capacity, ensuring efficient and timely delivery of goods. However, ensuring the smooth operation of such a platform hinges on reliable and accurate AI models.

Navigating the complexities of Generative AI in logistics

Our client faced several key challenges in their quest to optimize the user experience:

1 **Ensuring model performance:** The client needed to guarantee their LLM models' functionality, accuracy, and reliability. These models play a crucial role in providing proactive insights to shippers and carriers, enabling them to make informed decisions and optimize transportation outcomes.

2 **Validating the AI chatbot:** An AI-powered chatbot served as a key user interface within the platform. The client wanted to validate the chatbot's ability to perform complex calculations, trend detection, and data analysis tasks. It was also essential to ensure the chatbot provided actionable insights that empowered users to optimize their supply chains.

3 **Prioritizing security and compliance:** Security and compliance were paramount for the client. They needed robust testing to validate the effectiveness of their security measures, and confirm adherence to all relevant privacy policies and regulations.

By addressing these challenges, the client could ensure a seamless user experience and maintain trust with both shippers and carriers on their platform.



Indium's LLM testing solution: A tailored approach for logistics optimization

Understanding the client's diverse challenges, we at Indium crafted a comprehensive LLM testing solution to address their specific needs. This multi-pronged approach ensured their LLM models and chatbot's smooth operation, accuracy, and security.

Model output validation: To guarantee the LLM model's effectiveness in providing actionable insights, we employed several techniques:

Automated test data generation:

We utilized automation to generate vast test data, mimicking real-world scenarios shippers and carriers might encounter. This included web scraping to incorporate real-time data fluctuations.

Diverse question prompts:

We leveraged our in-built LLM models to create a vast pool of questions encompassing over 30 different prompt types. This ensured the model could handle a wide range of user queries and complexities. Furthermore, these tools generated equivalent questions and diverse prompts, comprehensively testing the model's understanding.

Validation across key areas:

We assessed the LLM model's ability to handle ambiguity, recognize entities and synonyms, identify offensive content, and understand sentiment. This holistic approach ensured the chatbot's responses were accurate, user-friendly, and appropriate for a professional logistics environment.

LLM Integration and performance optimization: Beyond model output, we ensured seamless integration with existing systems. We performed:

LLM Model integration validation:

This step guaranteed compatibility between the LLM models and the client's existing platforms, preventing disruptions and ensuring smooth data flow. This validation process went beyond text data and encompassed tables, graphs, and all other formats the AI could potentially encounter, ensuring smooth data flow and preventing disruptions.

Performance checks:

We evaluated the LLM model's speed, responsiveness, and overall efficiency to optimize performance and minimize user wait times.



Data privacy and security: Data security and user privacy were paramount. We conducted:

- ▶ **Data Privacy Checks:** This ensured strict adherence to the client's privacy policies and all relevant data authorization and authentication regulations.

Metrics-driven approach: To quantify the effectiveness of our LLM testing, we monitored a range of metrics. These included:

- **Consistency:** We measured the model's ability to deliver consistent and reliable results across various scenarios.
- **Accuracy:** We assessed the accuracy of the model's predictions and insights.
- **Error rate:** We identified and minimized the occurrence of errors within the model's outputs.
- **Response rate:** We evaluated the model's responsiveness to user queries, ensuring timely and efficient interaction.
- **Fallback rate:** We measured the frequency of situations where the model could not provide a response, allowing for further improvement.
- **F1 score:** This comprehensive metric combined precision and recall, offering a detailed picture of the model's overall effectiveness.

By implementing this tailored LLM testing solution, we empowered the client to move forward with confidence, ensuring their platform provided the most accurate, reliable, and secure logistics solutions for their users.



Measurable success: The impact of LLM testing

The implementation of Indium's LLM testing solutions yielded significant benefits for our client, impacting both customer engagement and business operations:

- ▶ **3x increased customer engagement:** The AI-powered chatbot, validated through rigorous testing, fostered a more engaging user experience. Customers received prompt and accurate answers to their queries, leading to a more interactive platform.
- ▶ **44% increase in issue resolution:** The improved accuracy and efficiency of the model empowered users to resolve issues independently, reducing reliance on customer support.
- ▶ **80% increase in customer satisfaction rate:** LLM testing dramatically increased customer satisfaction by providing a reliable and helpful platform.
- ▶ **30% reduced cost in customer support:** The chatbot's ability to handle a wider range of inquiries effectively reduced the burden on human customer support staff, leading to cost savings.