Trailblazer – An ML Augmented DMS

Team Size: 6

Advisors

Dr. Osvaldo Pacheco (orp@ua.pt)
Dr. Rui Costa (rui.costa@ua.pt)
Daniel Ferreira (danielmartinsferreira@ua.pt)

Motivation

The global tourism industry, one of the sectors hardest hit by the COVID-19 pandemic, is now witnessing an unprecedented resurgence. As travel restrictions ease and consumer confidence rebuilds, there's a marked increase in both the desire and actual engagement in travel activities worldwide. This revival, however, is not without its challenges. The post-pandemic tourism landscape is characterized by evolving tourist preferences and heightened expectations for personalized experiences. Travelers now expect their journeys to be tailored to their specific interests, needs, and values. This demand for customization extends from accommodations to tours, dining, and beyond. Technology, especially data analytics and AI, plays a pivotal role in meeting these expectations.

Goals

Trailblazer represents an ambitious initiative designed to harness the power of Machine Learning (ML) and Natural Language Processing (NLP) in the development of a sophisticated Destination Management System (DMS). This project is squarely focused on leveraging ML to conduct predictive analysis of trends within the tourism sector. Such analysis is crucial for Destination Management Organizations (DMOs), as it provides them with the necessary data to make well-informed decisions regarding infrastructure development, marketing strategies, and the implementation of sustainability practices.

By analyzing feedback from tourists across various platforms, the system can glean valuable insights into the sentiments and preferences of visitors. This information is not only useful for understanding what tourists enjoy or dislike but also plays a big role in enabling attraction providers to enhance the quality of their services.

Moreover, the system is equipped to automatically classify the offerings of these providers, a feature that streamlines the process of managing and presenting tourist attractions. At the heart of Trailblazer is a personalized recommendation engine, which is designed to process information regarding the preferences and past behaviors of tourists, along with real-time data, to generate suggestions for activities that are specifically tailored to the interests of everyone.

Additionally, the system facilitates a smoother discovery process for tourists seeking new activities, while simultaneously providing attraction providers with a platform to effectively market their services.
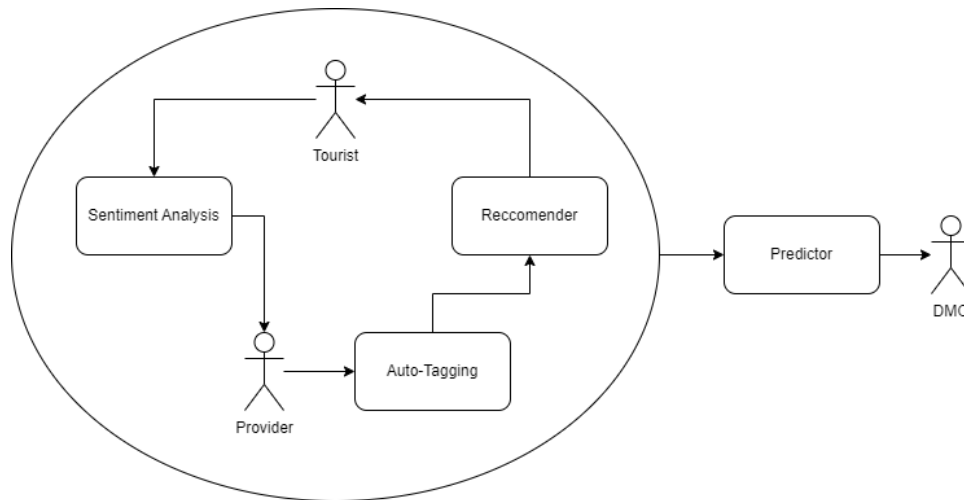
Figure 1: ML Conceptual Diagram for the Trailblazer system

The beneficiaries of Trailblazer are multifaceted:

Tourists stand to gain immensely from receiving travel recommendations that are customized to their unique tastes and interests, enhancing their overall travel experience.

Attraction providers are afforded insights derived from data analysis, allowing them to optimize their operations and tailor their offerings to meet the demands of the market more effectively.

Lastly, DMOs are equipped with advanced tools for analytics and prediction, enabling them to pursue strategies for destination marketing that are not only more effective but also aligned with the goals of sustainable tourism development.

Tasks

1. Problem definition
2. State of the Art
3. Analysis and requirements gathering
4. Design of the architecture for platform implementation
5. Implementation of a prototype
6. Testing and validation