



# Fan Engagement Analysis

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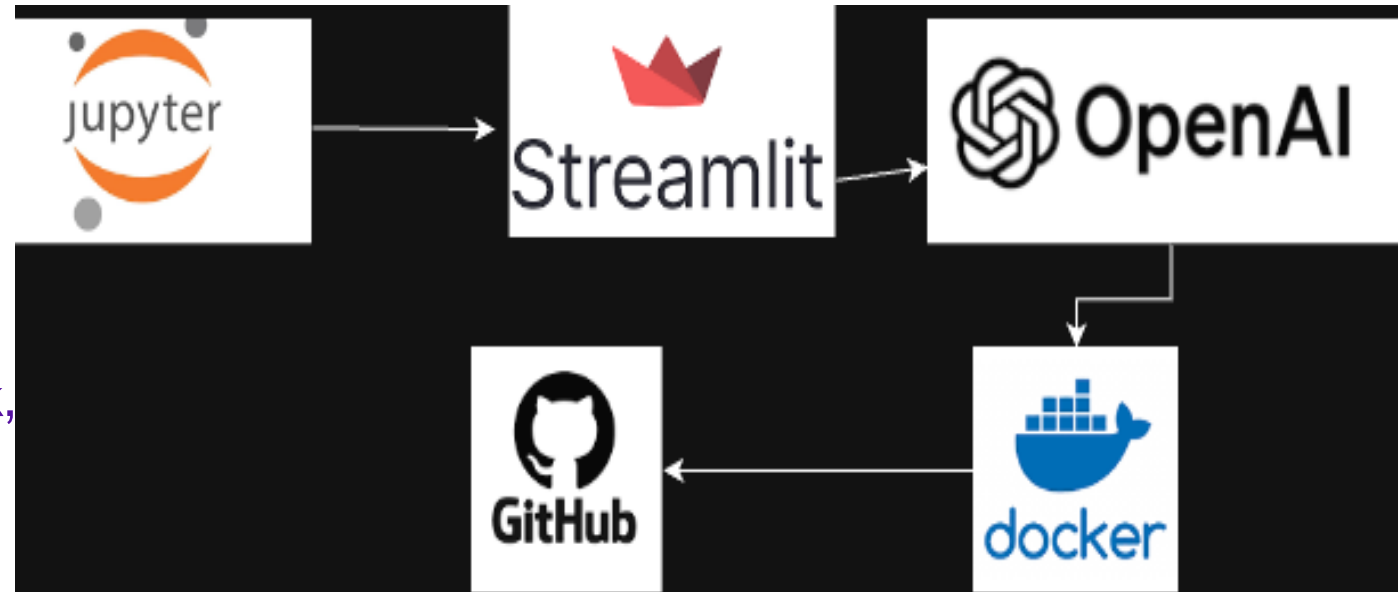
**KODING WITH KAGR CASE COMPETITION**

# Technologies Used

**Data Collection & Analysis:** Using Jupyter Notebook, we collected, cleaned, and analyzed fan data to uncover engagement trends and insights.

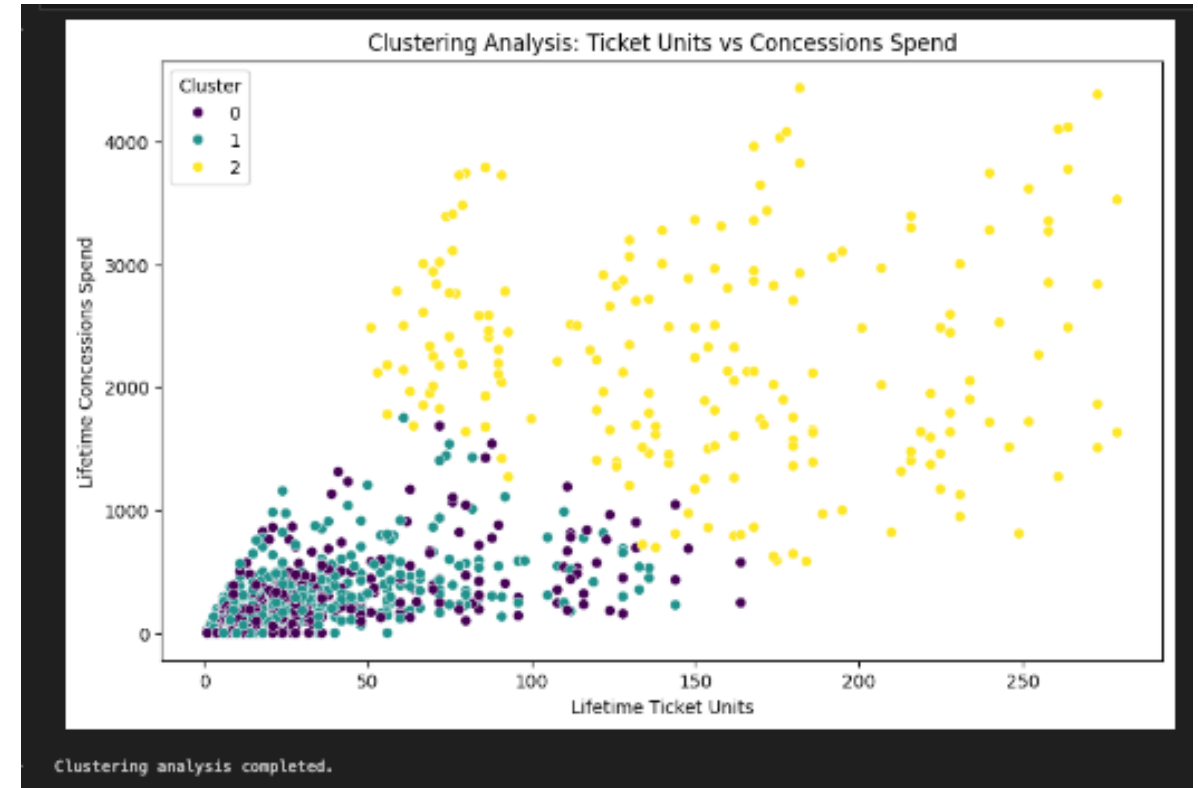
**Application Development:** We developed machine learning models in Jupyter Notebook, visualized insights using Streamlit, and added a chatbot feature with OpenAI API for interactive data exploration.

**Deployment & Version Control:** The entire application was containerized with Docker for consistent deployment and managed with Git for version control, ensuring easy access and collaboration.

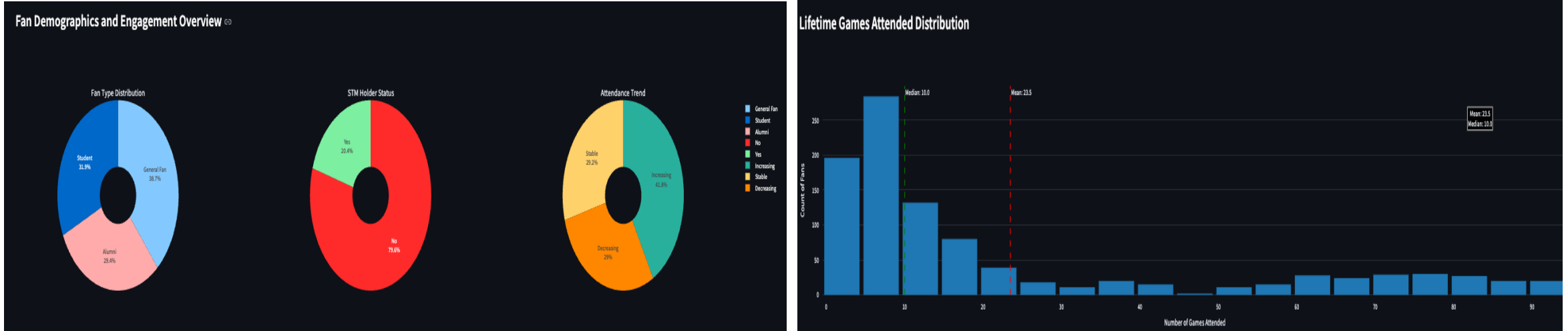


# Data Cleaning and Machine Learning

- 1. Classification Models:** Applied logistic regression and decision trees to classify fan types, supporting targeted engagement strategies.
- 2. Clustering Analysis:** Used K-means clustering to segment fans based on engagement, identifying high-value clusters for focused outreach.
- 3. Predictive Modeling:** Built regression models to forecast ticket sales and engagement scores, enabling proactive decision-making.
- 4. Model Performance Metrics:** Evaluated each model's accuracy to ensure reliable insights for stakeholder recommendations.



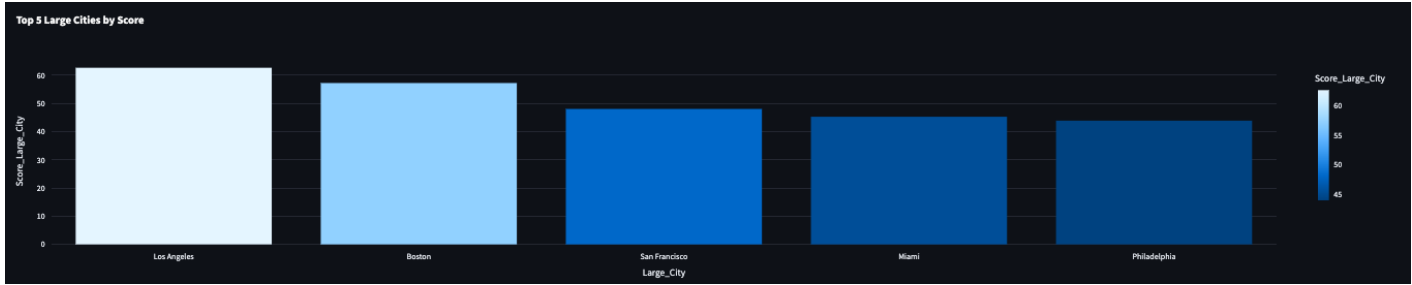
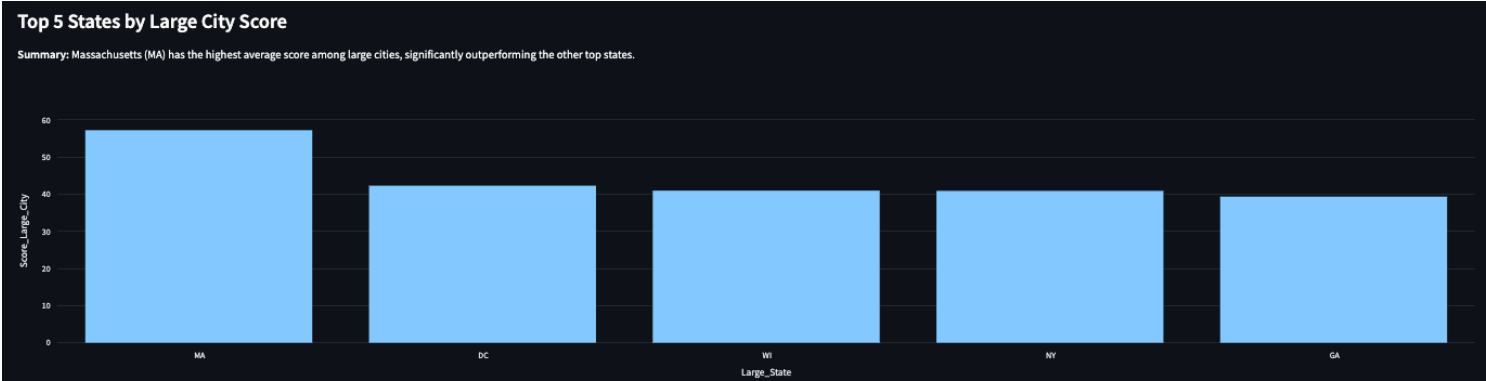
# FAN ENGAGEMENT ANALYSIS



- 1. Exploratory and Predictive Analysis:** We analyzed fan engagement metrics, focusing on factors like fan type distribution, engagement by distance, and spending behaviors.
- 2. Key Insights:** Found that the largest fan segment is General Fans (38.7%), with STM holders showing higher average engagement scores (48.79) than non-STMs (42.73).
- 3. Impact of Distance on Spending:** Spending trends decrease as distance from the arena increases, with local fans showing the highest engagement and concession spend.

# Market Analysis

Boston stands out as a top city for basketball fans, with a rich history driven by the Boston Celtics’ 17 NBA championships and one of the most engaged fan bases across social media. The city’s sports culture, combined with three Division 1 NCAA teams, creates a strong basketball following. TD Garden, as Boston’s premier arena, offers an ideal venue for hosting large-scale events, thanks to its capacity, accessibility, and high local fan engagement.



Best Cities for Basketball Fans

Q Search by City				
Overall Rank ↕	City ↕	Total Score ↕	NBA Rank ↕	NCAA Rank ↕
1	Los Angeles, CA	62.63	1	1
2	Boston, MA	57.22	2	14
3	San Francisco, CA	48.03	3	114
4	Salt Lake City, UT	46.13	4	67
5	Miami, FL	45.27	5	74



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Scenario Settings

Ticket Discount Percentage (%)

0 10 50

Maximum Distance to Arena (miles)

0 50 100

Filter by Income Level

All

Select Fan Type

Alumni General Fan Student

Filter by Age Range

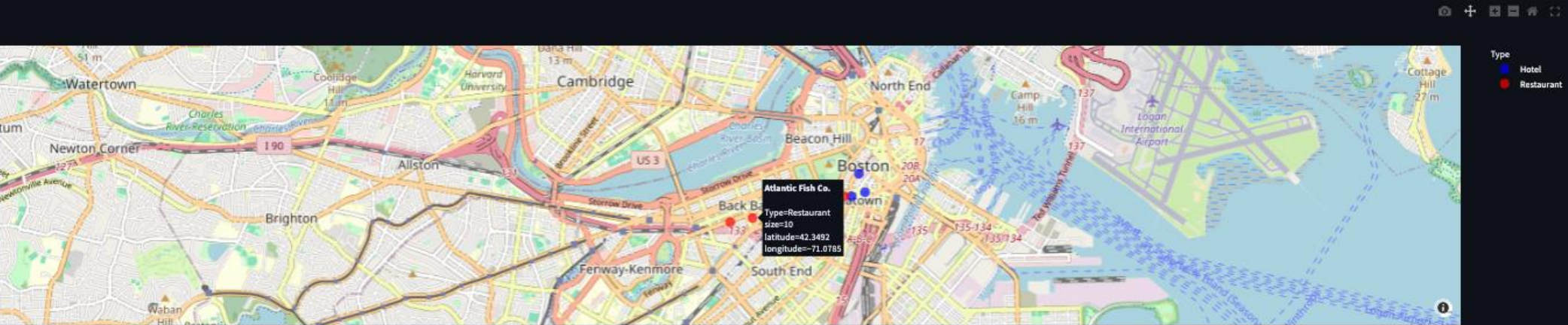
18 18 65 65

Logistical Considerations

Select a City

Boston

Map of Hotels and Restaurants in Boston

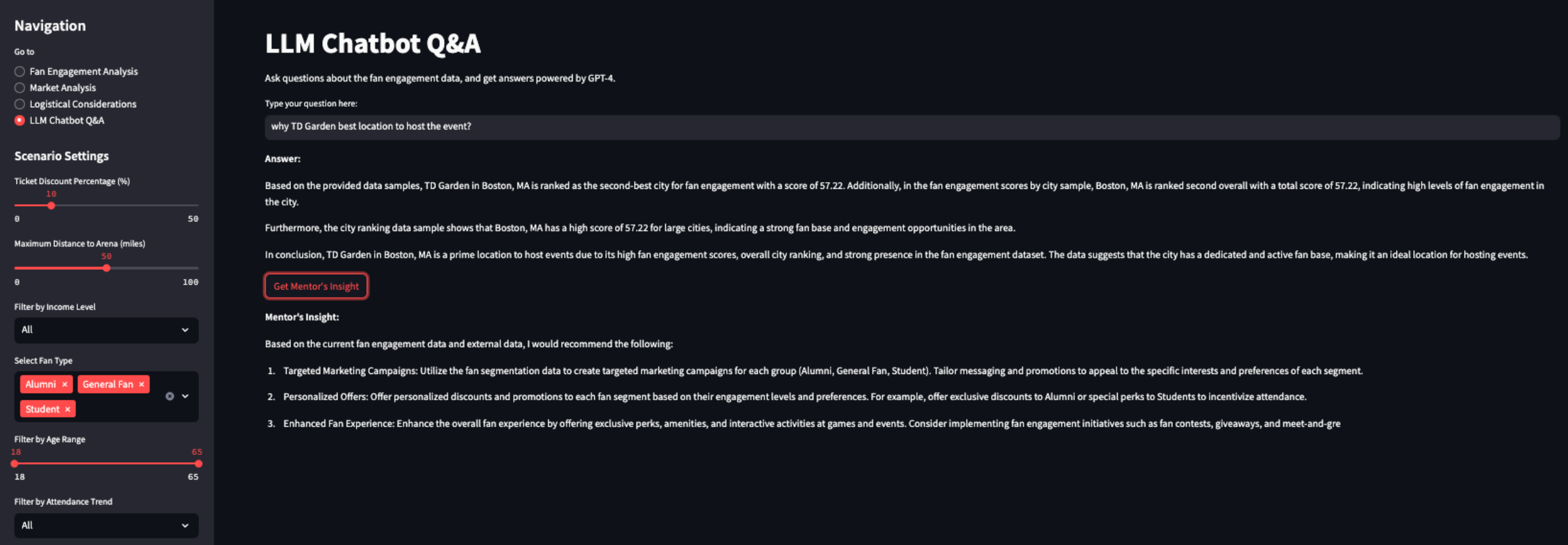


Benefits for UMass Dartmouth Students Attending the Event at TD Garden:

- Proximity to the Venue:** TD Garden is located approximately 60 miles from UMass Dartmouth, making it easily accessible.
- Transportation Options:** Public Transit: Extensive MBTA system provides affordable travel options, Shuttle Services: Available between Logan Airport and downtown Boston.
- Number of Daily Flights:** Logan International Airport offers approximately 350+ daily flights.
- Fan Engagement Opportunities:** Fosters school spirit and community among students, Opportunities for involvement in organizing activities.
- Economic Benefits:** Increased attendance supports local businesses in Boston.

Key Insights:

- TD Garden in Boston** has excellent airport accessibility and public transit options.
- It features a large capacity suitable for hosting significant events.
- The surrounding area offers numerous amenities and attractions that enhance fan experience.



1.Enhanced Interactivity: The LLM Chatbot allows users to ask questions and receive insights, making the application more interactive and engaging for exploring fan data.

1.Understanding and Accessibility: By providing answers to specific questions about statistics, venue options, and engagement trends, the chatbot helps users quickly interpret data and make informed decisions.

## References

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<https://www.tdgarden.com/about-td-garden>

<https://www.columbussports.org/marchmadness/>

<https://www.eventtravel.com/td-garden-massachusetts>