

University: University of Massachusetts Dartmouth, MA

**Submitted By: Roshni Pal** 

**Mentor's Name: Luke Mistretta** 

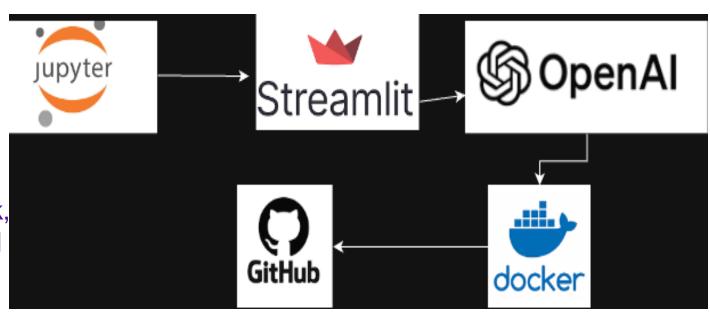
#### KODING WITH KAGR CASE COMPETITION

# **Technologies Used**

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

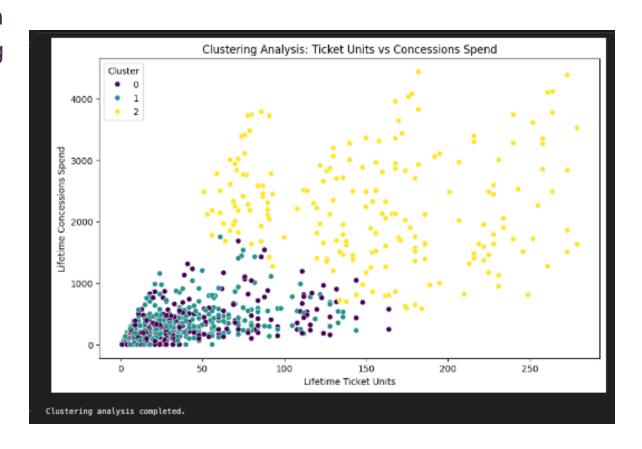
Application Development: We developed machine learning models in Jupyter Notebook, visualized insights using Streamlit, and added a chatbot feature with OpenAl API for interactive data exploration.

**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.



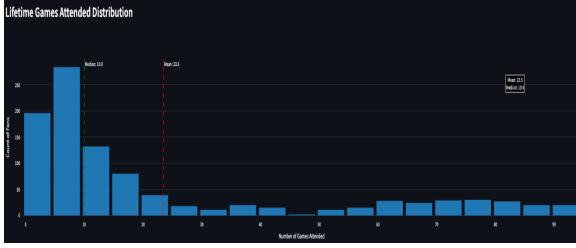
## **Data Cleaning and Machine Learning**

- **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

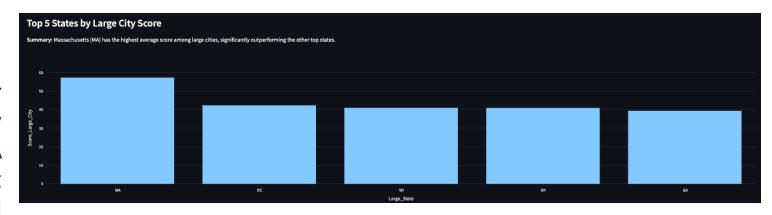


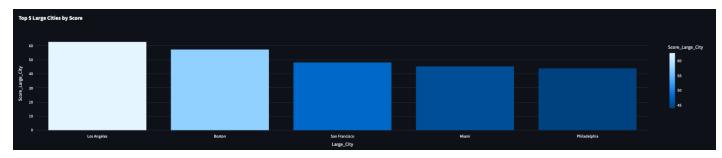


- 1. Exploratory and Predictive Analysis: We analyzed fan engagement metrics, focusing on factors like fan type distribution, engagement by distance, and spending behaviors.
- **2. Key Insights**: Found that the largest fan segment is General Fans (38.7%), with STM holders showing higher average engagement 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**

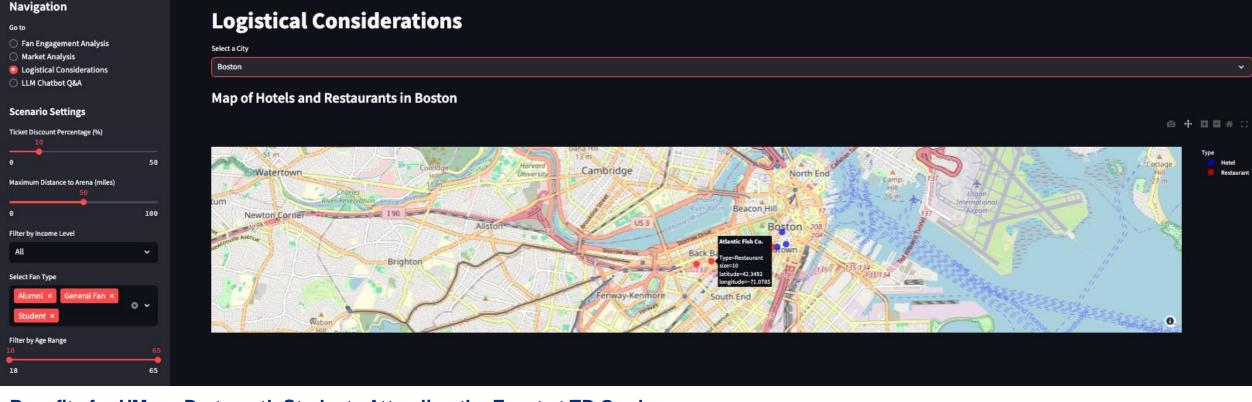
Boston stands out as a top city for basketball fans, with a rich history driven by the Boston Celtics' 17 NBA championships and one of the most engaged fan bases across social media. The city's sports culture, combined with three Division 1 NCAA teams, creates a strong basketball following. TD Garden,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





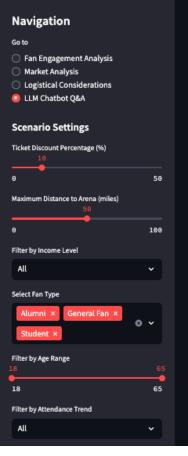
Best Cities for Basketball Fans

| 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           |



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

- 1. Proximity to the Venue: TD Garden is located approximately 60 miles from UMass Dartmouth, making it easily accessible.
- 2. Transportation Options: Public Transit: Extensive MBTA system provides affordable travel options, Shuttle Services: Available between Logan Airport and downtown Boston.
- 3. Number of Daily Flights: Logan International Airport offers approximately 350+ daily flights.
- 4. Fan Engagement Opportunities: Fosters school spirit and community among students, Opportunities for involvement in organizing activities.
- 5. 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.



#### **LLM Chatbot Q&A**

Ask questions about the fan engagement data, and get answers powered by GPT-4.

Type your question here:

why TD Garden best location to host the event?

Answer:

Based on the provided data samples, TD Garden in Boston, MA is ranked as the second-best city for fan engagement with a score of 57.22. Additionally, in the fan engagement scores by city sample, Boston, MA is ranked second overall with a total score of 57.22, indicating high levels of fan engagement in the city.

Furthermore, the city ranking data sample shows that Boston, MA has a high score of 57.22 for large cities, indicating a strong fan base and engagement opportunities in the area.

In conclusion, TD Garden in Boston, MA is a prime location to host events due to its high fan engagement scores, overall city ranking, and strong presence in the fan engagement dataset. The data suggests that the city has a dedicated and active fan base, making it an ideal location for hosting events.

Get Mentor's Insight

#### Mentor's Insight:

Based on the current fan engagement data and external data, I would recommend the following:

- 1. Targeted Marketing Campaigns: Utilize the fan segmentation data to create targeted marketing campaigns for each group (Alumni, General Fan, Student). Tailor messaging and promotions to appeal to the specific interests and preferences of each segment.
- 2. Personalized Offers: Offer personalized discounts and promotions to each fan segment based on their engagement levels and preferences. For example, offer exclusive discounts to Alumni or special perks to Students to incentivize attendance.
- 3. Enhanced Fan Experience: Enhance the overall fan experience by offering exclusive perks, amenities, and interactive activities at games and events. Consider implementing fan engagement initiatives such as fan contests, giveaways, and meet-and-gre

- 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

https://wallethub.com/edu/best-worst-cities-for-basketball-fans/11034

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

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

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