Data-Driven Planning: Olympic Games Case Study

PURDUE UNIVERSITY
The Data Mine
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Introduction

Ray Ewry Sports Engineering Center has partnered with the Knowledge Management Team of the International Olympic Committee to explore a case study on improving some of the planning process regarding allocating resources.

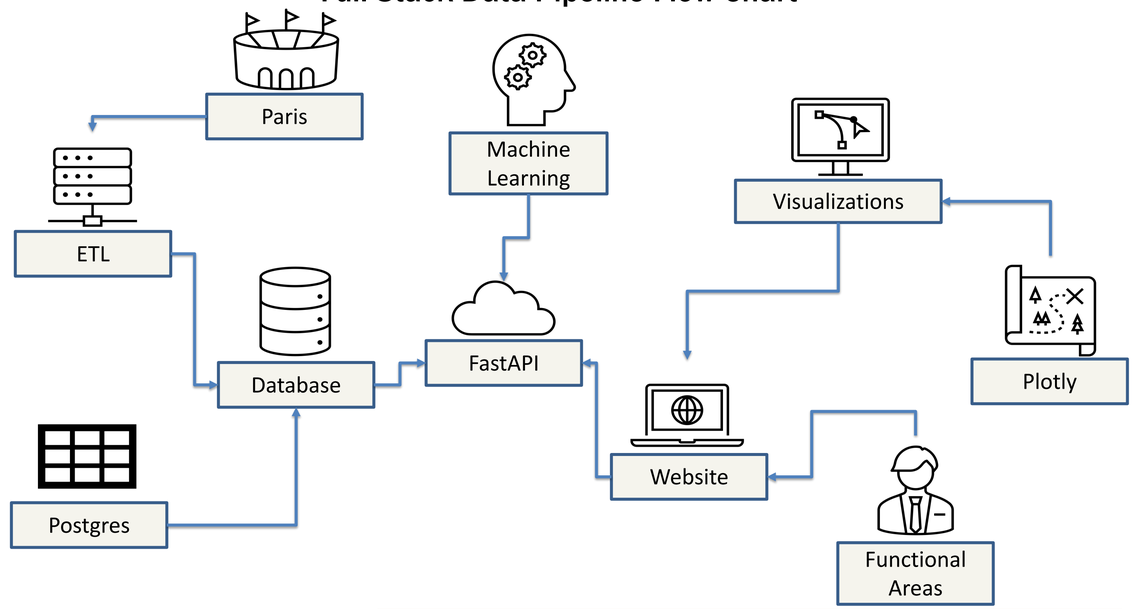
Our goal: Consolidate manually entered data and provide Olympic Games planners with a visual population planning solution based on a variety of different features such as:

- Time of Day
- Sport Type
- Medal Session
- Session Duration

Methodology

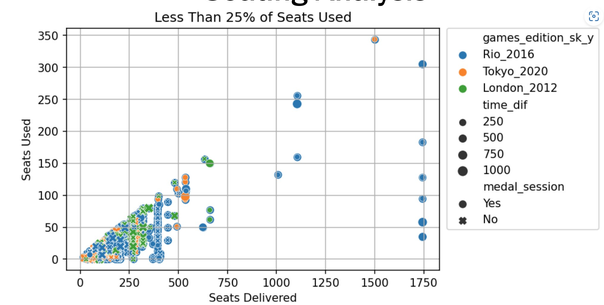
- Given Venue Population Models for 2024 Olympic Games, our team preprocessed raw input data and constructed a database schema using PostgreSQL
- To visualize and communicate finding in the data, we developed an interactive data app using JavaScript, HTML, CSS, and Dash .
- Our backend is a REST API built using FAST API, and we communicate data from the PostgreSQL database to our data app using standard HTTP Request Methods
- Due to some of the Venue Population Models being unpopulated, we used Python packages such as Matplotlib to visualize an in-depth seating analysis

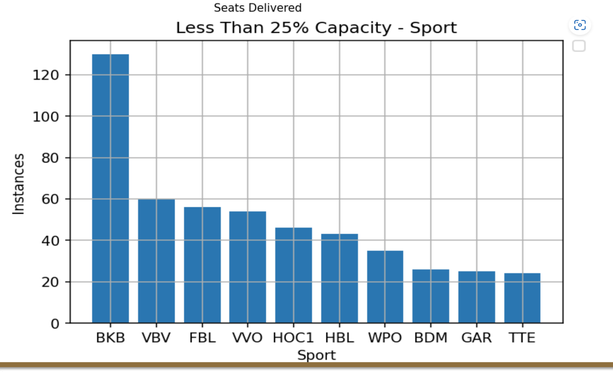
Full Stack Data Pipeline Flow Chart



Viewing Data in Application

Seating Analysis





Conclusion and Future Goals

Our team has worked hard to create a demand model to help better visualize Olympic Games planning population data. We have cleaned, transformed, and consolidated data for easier viewing. We connected our database to FASTAPI to create an organized interface to consolidate and visualize attendance data for Olympic Games. In the future, we hope to implement machine learning models to predict some of the currently unknown stakeholder populations.

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