

# LOCATION FOR A CHILDREN RECREATION CENTER IN THE HEART OF MUMBAI, INDIA

## 1. INTRODUCTION

Mumbai (formerly called Bombay) is a densely populated city on India's west coast. A financial center, it's India's largest city. On the Mumbai Harbour waterfront stands the iconic Gateway of India stone arch, built by the British Raj in 1924. Offshore, nearby Elephanta Island holds ancient cave temples dedicated to the Hindu god Shiva. The city's also famous as the heart of the Bollywood film industry.

**1.1 The Problem:** They say "all work and no play makes Jack a boy". It is widely known that kids from India are always keen on education especially tech-related, and spend most of their childhood studying for a better future. However, it is good to build the mental state of these children with fun activities, this can be done by fun activities. The problem to solve in this case study is where best to set up this center for easy access to children.

**1.2 The Solution:** Castiel Children Park is a recreation park intended for children in the metropolis of Mumbai, India where all children from every cluster of the city will have access to the facility. Some of the activities that will be available includes;

- ❖ Coding camp
- ❖ Skating
- ❖ Swimming activities
- ❖ Arcade
- ❖ Fast foods
- ❖ Children's fitness and many more.

While there might already exist locations that are children-oriented, Castiel will be the first of its kind to give children a subscription plan-based payment which will give access to every activity for subscription validity duration except for the fast-food section that may require a little token for each meal. This recreation center will allow children from every background, different schools, and upbringing to interact in an adult-supervised environment.

## 2. DATA COLLECTION AND CLEANING

Based on the definition of our problem, factors that will influence our decision are:

A number of children parks in the neighborhood.

- ❖ Distance between existing parks in the neighborhood.
- ❖ Distance of neighborhood from city center
- ❖ We decided to use a regularly spaced grid of locations, centered around the city center, to define our neighborhoods.

Following data sources will be needed to extract/generate the required information:

- ❖ The number of Parks and their type and location in every neighborhood will be obtained using Foursquare API.

## 3. METHODOLOGY

In this project, we will direct our efforts on detecting the density of parks. We will limit our analysis to areas around the city center.

In the first step, we have collected the required data: location and the category of every children's park within the city.

The second step in our analysis will be the calculation and exploration of 'park density' across different areas of Mumbai.

Folium map will be used to visualize a few promising areas close to the center with a low number of restaurants in children's park (and no Italian restaurants in the vicinity) and focus our attention on those areas.

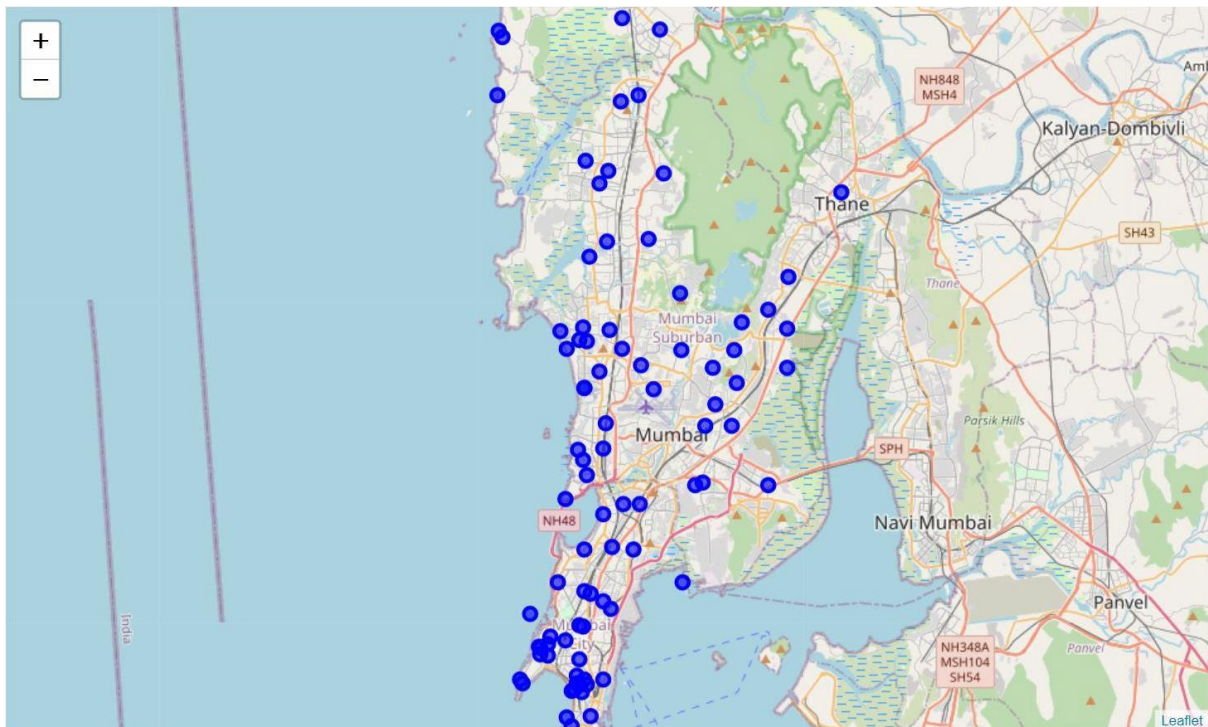
In the third and final step, we will focus on the most promising areas and within those create clusters of locations that meet some basic requirements established in discussion with stakeholders: we will take into consideration locations with fewer children-related parks. We will present a map of all such locations but also create clusters (using k-means clustering) of those locations to identify general zones/neighborhoods/addresses which should be a starting point for final 'street level' exploration and search for optimal venue location by stakeholders.

#### 4. DATA EXPLORATION

As a database, I used GitHub repository in my study. The Mumbai neighborhood data used is gotten from Wikipedia.

	Neighborhood	Location	Latitude	Longitude
0	Amboli	Western Suburbs	19.129300	72.843400
1	Chakala, Andheri	Western Suburbs	19.111388	72.860833
2	D.N. Nagar	Western Suburbs	19.124085	72.831373
3	Four Bungalows	Western Suburbs	19.124714	72.827210
4	Lokhandwala	Western Suburbs	19.130815	72.829270

Using latitude and longitude, I used python Folium library in python to visualize geographic details of Mumbai and its neighborhood as shown below:



#### 5. DISCUSSION

Our analysis shows that the center distance between cluster 1 and cluster 3 will be a great place to site Castiel recreation park for children.

## **6. CONCLUSION**

The purpose of this project was to identify a neighborhood in Mumbai, India close to the center with a low number of recreation parks (particularly ones that are children-oriented) in order to aid stakeholders in narrowing down the search for an optimal location for Castiel children park. By children's park density distribution from Foursquare data, we have first identified general boroughs that justify further analysis and then generated an extensive collection of locations that satisfy some basic requirements regarding existing parks. Clustering of those locations was then performed and information of those clustered parks was created to be used as starting points for the final exploration by stakeholders.

The final decision on the park creation will be made based on specific characteristics of neighborhoods and locations in every recommended zone, taking into consideration additional factors like proximity to children's schools and availability of good roads and water amongst other amenities.