



## Next Nike Store in New Mexico

*In the beginner's mind there are many possibilities, but in the expert's mind there are few.*

——Shunryu Suzuki, *Zen Mind, Beginner's Mind*

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# Introduction: Business Problem

- **Nike, Inc.** is an American multinational corporation that is engaged in the design, development, manufacturing, and worldwide marketing and sales of footwear, apparel, equipment, accessories, and services.
- Even though online shopping is very popular nowadays, physical stores are still very important for a company. They enable consumers to feel products and corporate culture most directly, and also enhance brand awareness.



# Introduction: Business Problem

- There are **273** Nike stores in **43** states in the United States, including **Nike City Flagship Shops, Nike Factory Stores, Nike Community Stores** and some other kinds of stores. Most of these shops are located in areas where commercial activities are intensive. Some states don't have any Nike store, like New Mexico, North Dakota and South Dakota.
- **Santa Fe** is the capital of the U.S. state of New Mexico. Tourism is a major element of the Santa Fe economy, with visitors attracted year-round by the climate and related outdoor activities (such as skiing in years of adequate snowfall; hiking in other seasons) plus cultural activities of the city and the region. The city is also well known as a center for arts that reflect the multicultural character of the city. Therefore, building a Nike store here maybe a good choice, because it can increase the diversity of Nike stores and expand brand influence. There was a Nike Factory store in Santa Fe, but it was closed, maybe because its location wasn't suitable.
- Supposing Nike decides to build a new store in Santa Fe. In this project, I will try to answer two questions:
- ***Where should the new store be built?***
- ***What kind of store should the new store be, Nike City Flagship Shop or Nike Factory Store?***
- I collected the data of venues around the existing Nike store. **The data includes the number of nearby restaurants, stadiums, shops, bus stops and so on.** I used the data to build a **machine learning model(decision tree)**, and then used this model to select the appropriate locations in Santa Fe.

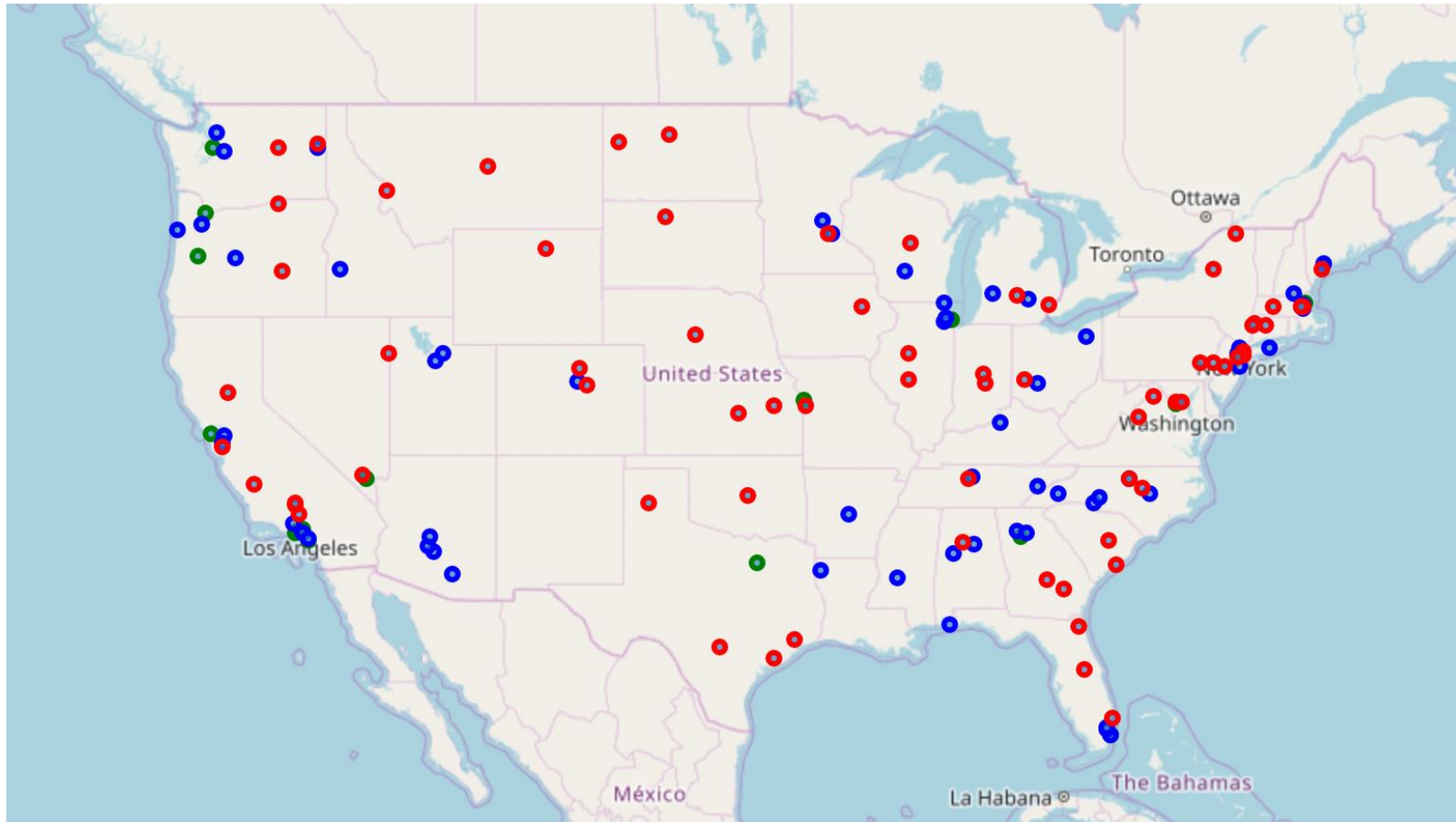
# Data: Getting locations' latitudes and longitudes by Google map API

- I collected the names of **22 Nike City Flagship Shops**, and **58 Nike Factory Stores** from Nike official website.
- And I also collected names of 70 random locations in different cities, there are no Nike stores around these locations.
- I saved all names in a csv file. I set level='city' to Nike City Flagship Shops, level='factory' to Nike Factory Stores, and level='non' to random locations.

**Nike City Flagship Shops** are marked by **green dots**.

**Nike Factory Stores** are marked by **blue dots**.

**Random locations** are marked by **red dots**.





# Using Foursquare API to get the number of nearby venues

- After having 150 targets' specific locations, I use Foursquare API to get the number of nearby venues.
- An ideal location for a Nike store should be located in areas where commercial activities are intensive. That is to say, an ideal location should have many restaurants and shops nearby. Convenient public transport and parking are also required. As for a sportswear brand, being near to some stadiums and sports events may be also a good choice.
- Therefore, I selected 8 categories from Foursquare Venue Categories and decided to use them as factors to distinguish the ideal locations.

**8 categories are:**

**Stadium**

**Food**

**Athletics & Sports**

**Parking**

**Shop & Service**

**Clothing Store**

**Bus Stop**

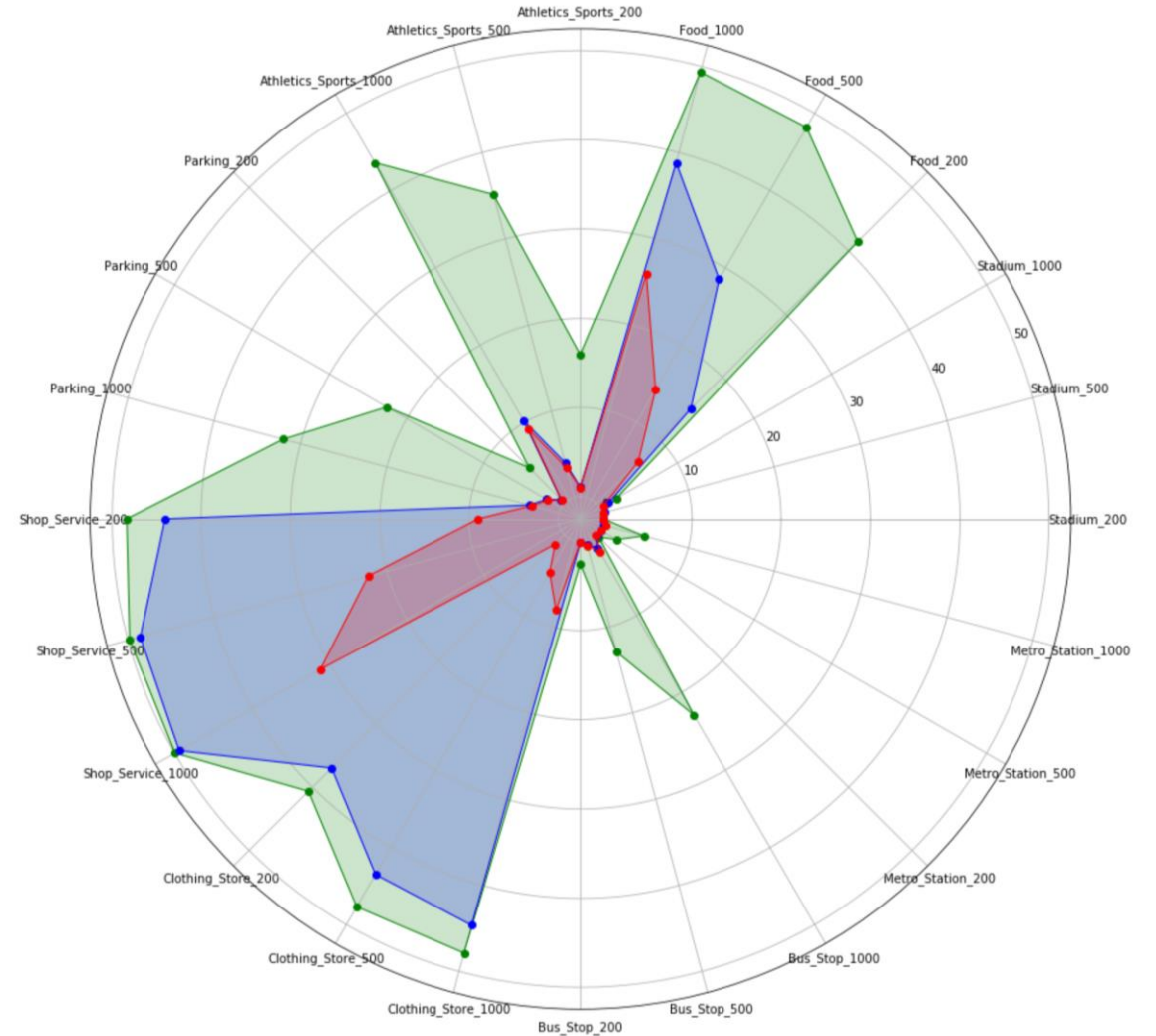
**Metro Station**

- I also set 3 different radiuses: **200 meters, 500 meters, 1000 meters** for searching nearby venues. In this way, I can combine different factors with different searching radiuses, and have more choice when building decision tree models, then I can choose the one with the highest accuracy.

	Unnamed: 0	store	level	latitude	longitude	Stadium_200	Stadium_500	Stadium_1000	Food_200	Food_500	...	Shop_Service_1000	
0	0	Nike Boston	city	42.349985	-71.080032	0	0	2	49	50	...	50	
1	1	Nike Bucktown	city	41.911654	-87.677723	0	1	1	47	50	...	50	
2	2	Nike Chicago	city	41.894421	-87.623712	1	2	2	50	50	...	50	
3	3	Nike Dallas North Park	city	32.867572	-96.773064	0	0	0	46	50	...	50	
4	4	Nike Eugene	city	44.064194	-123.078073	0	0	1	9	30	...	50	



- Now, let's make a **radar picture** to visualize the factors of three different levels.



Factors of Nike City Flagship Shops are marked by green dots.

Factors of Nike Factory Stores are marked by blue dots.

Factors of Random locations are marked by red dots.

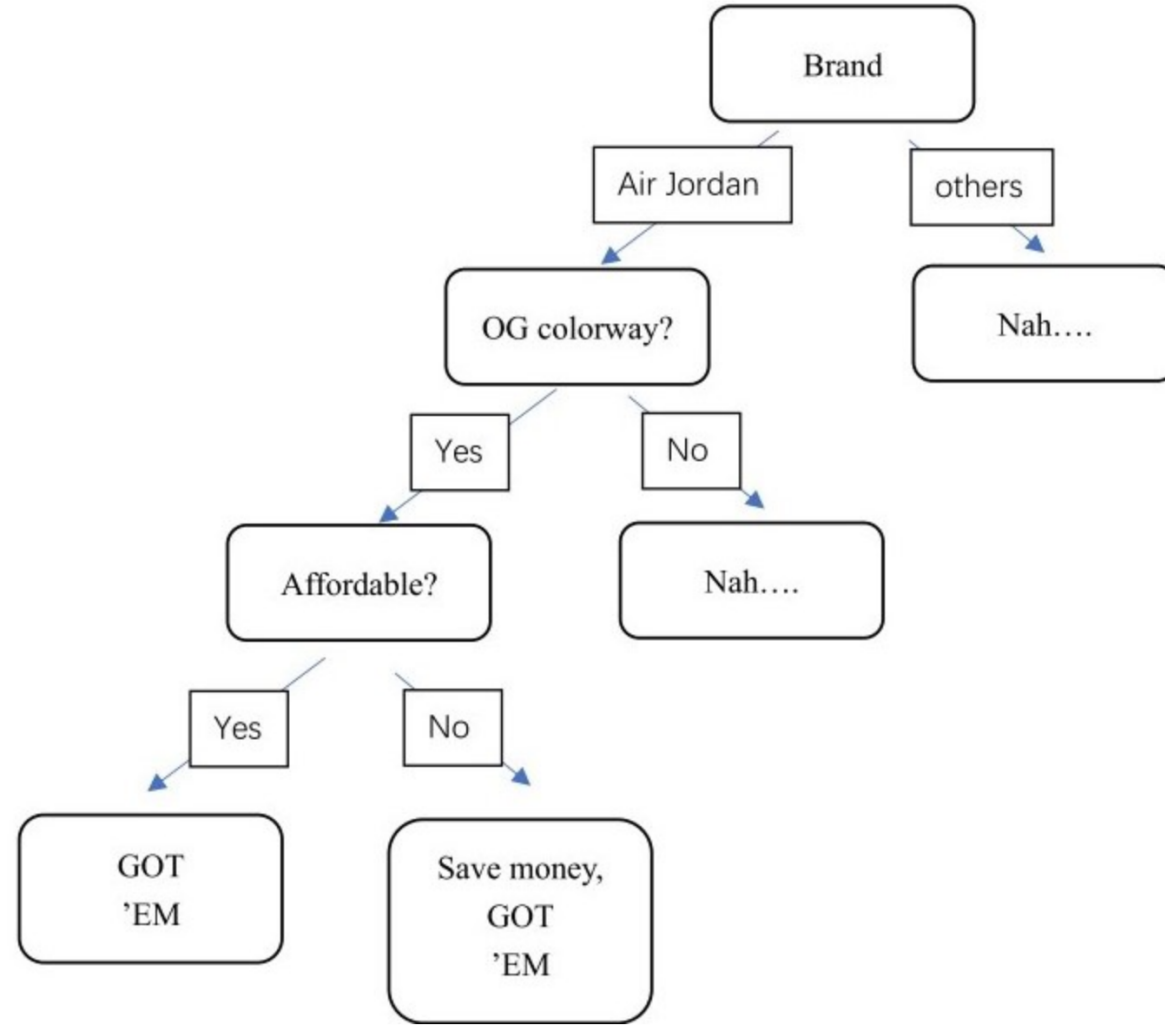
Now, you know why this is called 'radar picture'.

# Methodology

- **Machine Learning: decision tree model**
- A decision tree is a flowchart-like structure in which each internal node represents a "test" on an attribute (e.g. whether a coin flip comes up heads or tails), each branch represents the outcome of the test, and each leaf node represents a class label (decision taken after computing all attributes). The paths from root to leaf represent classification rules.  
*(This is the definition from Wikipedia, BORING, right? Thank you for being awake!)*

Let me show you a vivid example.

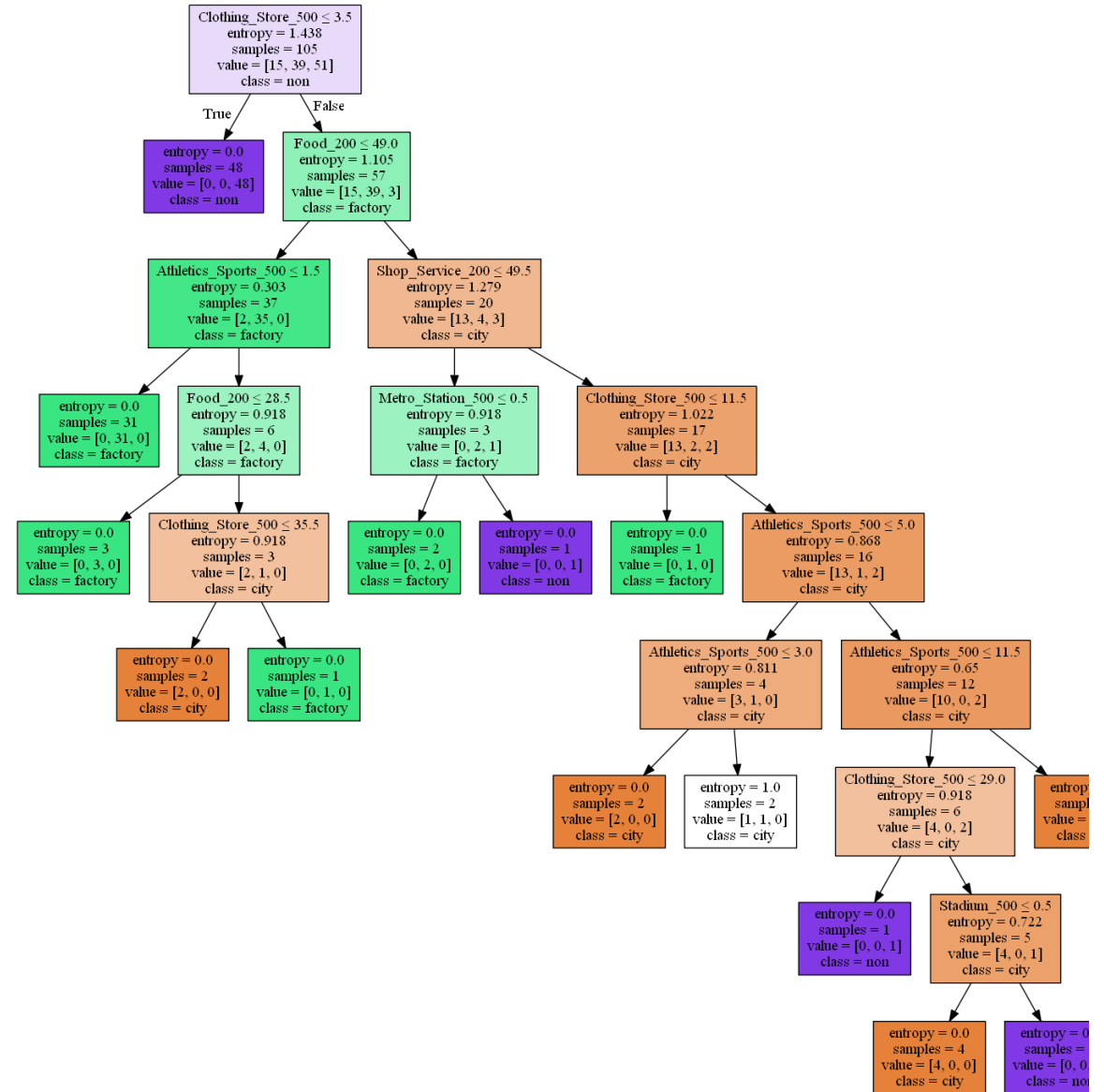
This is the decision tree of an **OG Jordan sneakerhead** making a purchase decision.



Brand,OG colorway,Affordable are like venus-factors, purchase decisions are like 'levels'of locations.

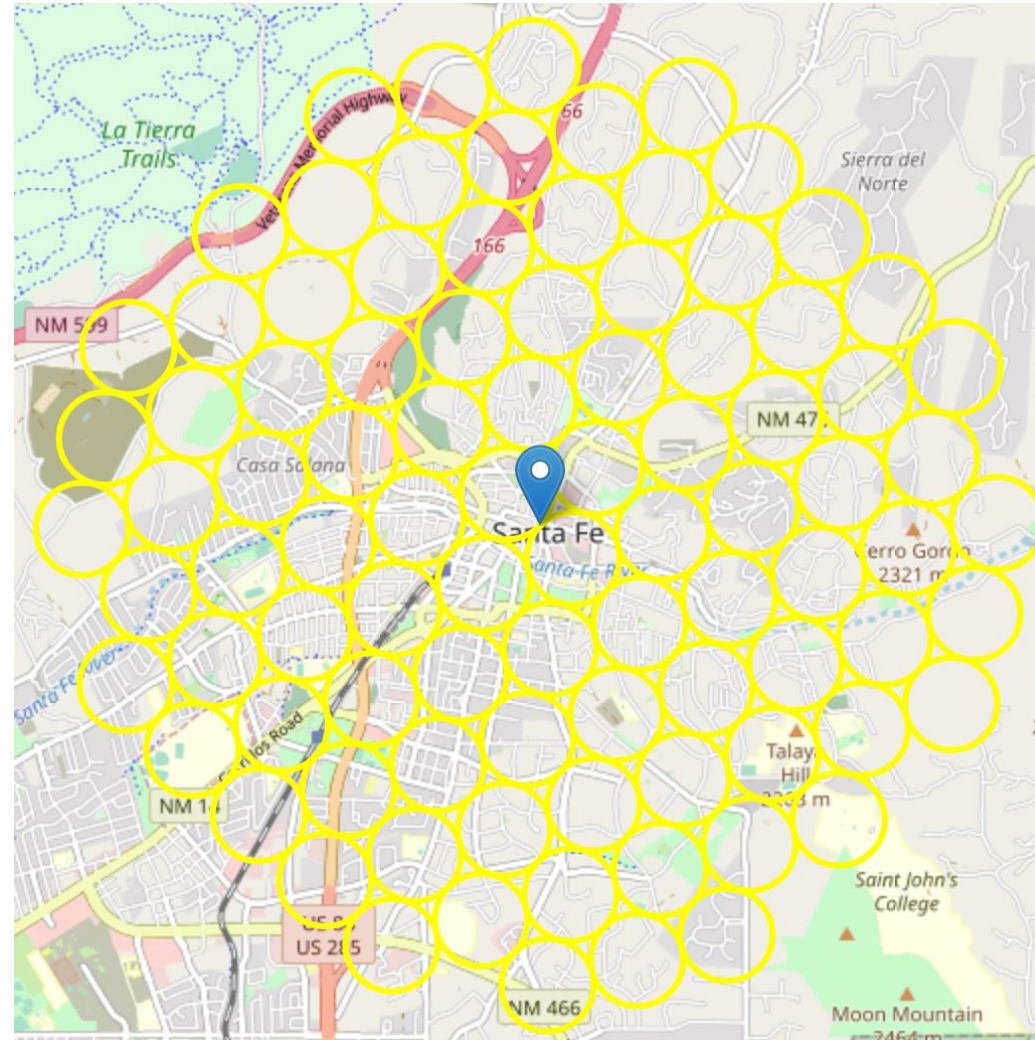
Now let's use **scikit-learn** to build some more complex decision trees.

- The decision tree with the highest accuracy.



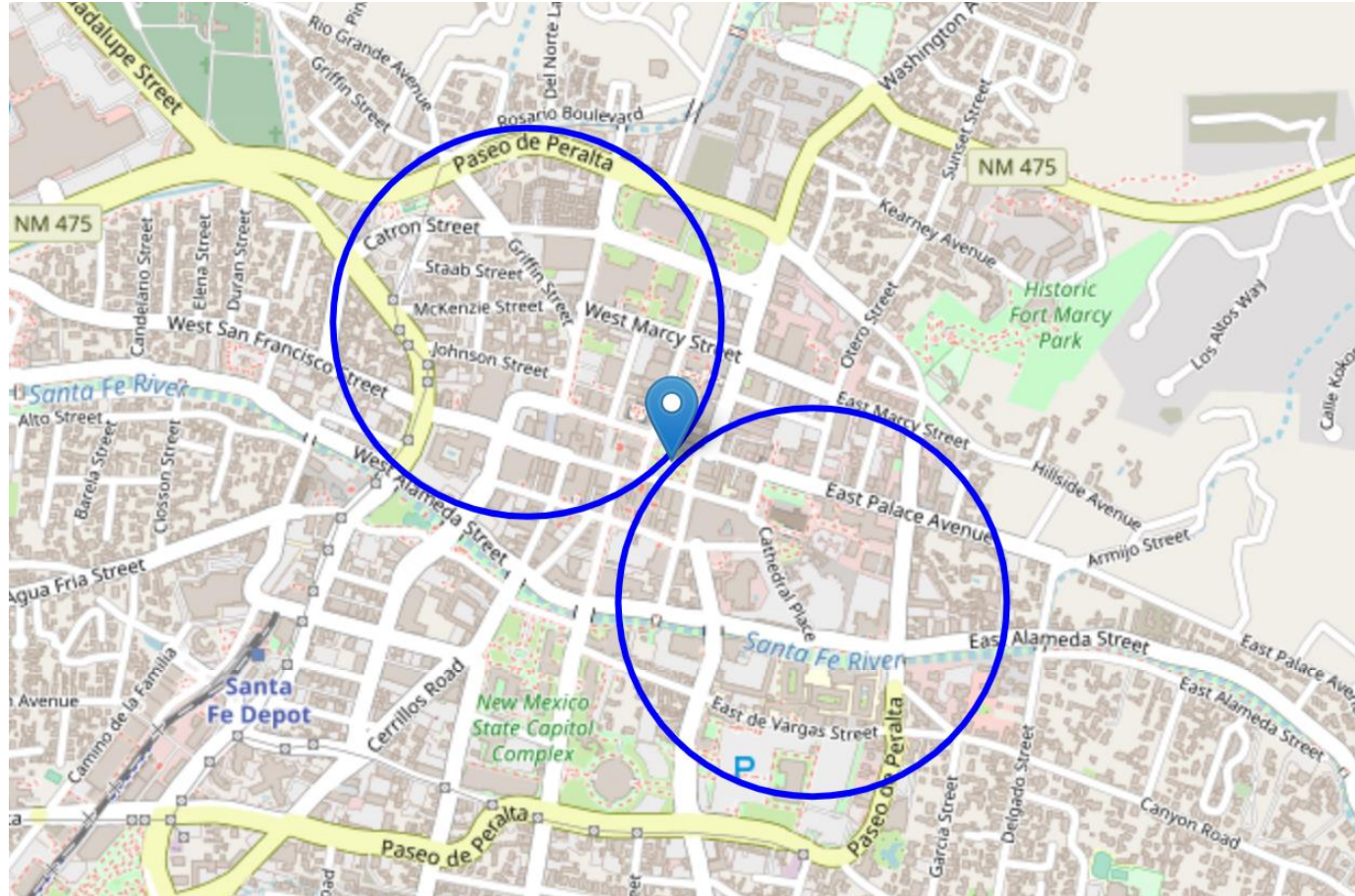
# Finding the ideal locations

- Creating latitude & longitude coordinates for centroids



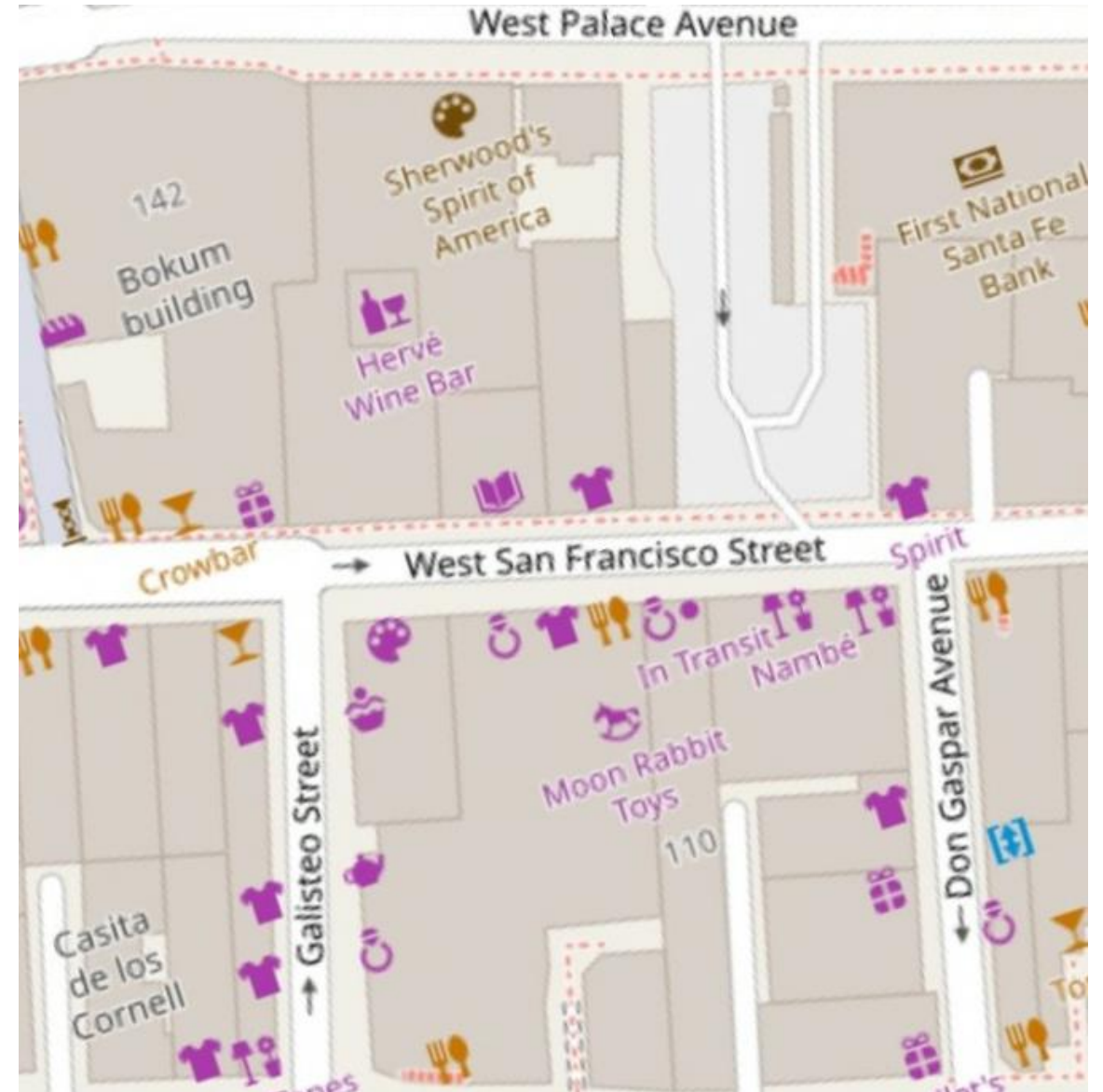


# Results



The addresses of ideal location for Nike factory stores are: 223 Cathedral Pl, Santa Fe, NM 87501, USA and 214 Mckenzie St, Santa Fe, NM 87501, USA

- Personally, I would choose this area.





# Conclusion and Discussion

- In this project, I used the data of nearby venues to characterize the existing Nike store. The data includes the number of nearby restaurants, stadiums, shops, bus stops and so on. I used the data to build a machine learning model(decision tree) and then used this model to select the appropriate locations in Santa Fe.
- This project may look naive in the real world, because I ignored many factors, like rental, government permission and so on. But I believe this could be helpful for Nike to make a decision. With more improvements, this can reduce the cost of human onsite research. This project adopts a very universal logical approach, it can be extended to more types of stores and locations.

*Thank you so much for reading!*