

Pokemon Go and Tulane/Loyola Universities

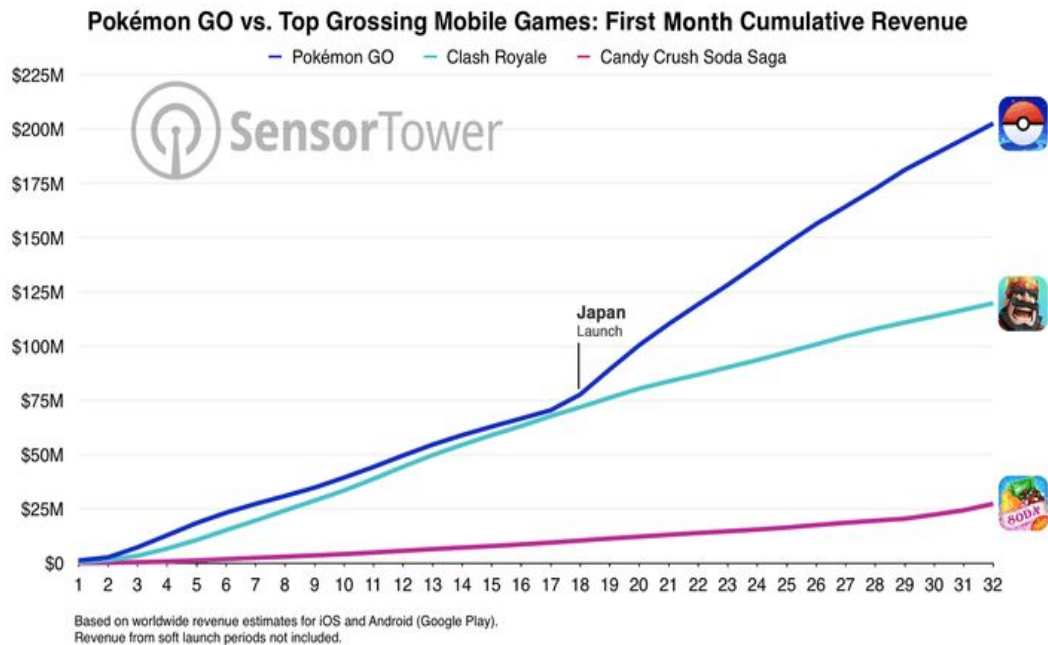
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Machine Learning
Fall 2016

Itinerary

- What is Pokemon Go?
- Scanning Mechanics
- Map Mechanics
- Map Features
- Machine Learning Applications
- Sample Data and Training
- Pidgey / Eevee Map
- Bulbasaur / Squirtle Map
- Conclusions

What is Pokemon Go and Why Does It Matter?

- Highest first month revenue for a mobile game, ever.
- Eclipsed \$200 million dollar revenue after just ONE MONTH of release.
- Since release (July 6, 2016), has never dropped out of the top 25 apps in daily revenue for iOS OR Android.





Scans 70 meters in all direction from your current GPS location every 10 seconds.



When nearby Pokemon are detected, they show up and may be “tapped on” to engage in the Pokeball fight.

Setting Up The Map

Source:

<https://github.com/mchristopher/PokemonGo-DesktopMap>

Service	Username	
ptc	leohunt522	[X]
google	leohuntington521@gmail.com	[X]
google	leohuntington522@gmail.com	[X]
google	leohuntington523@gmail.com	[X]
google	leohuntington524@gmail.com	[X]
ptc	leohunt523	[X]

Bot Accounts

Add New Account

Start Server

Google Maps Key

Google Maps API Key

AlzaSyDj7wtLrky1jAIH6syzw6KIKpCgSP1odZw

Follow this guide to generate your API key

Config Options

29.939940 -90.118897

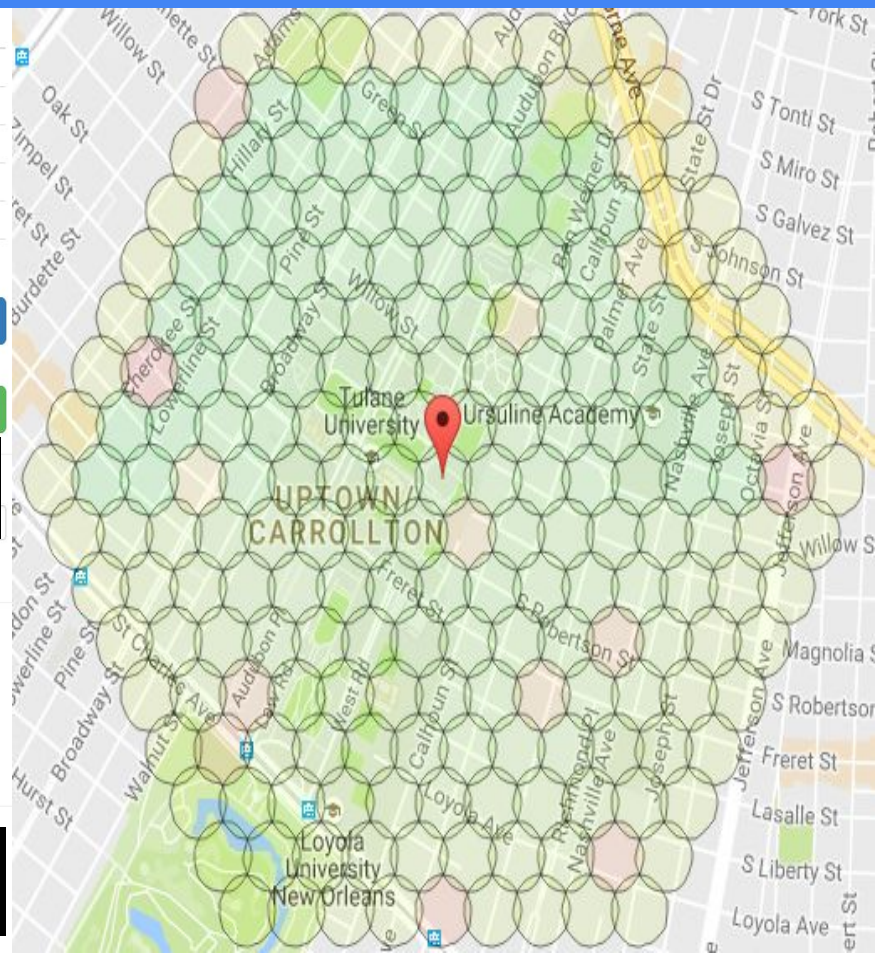
Address

Longitude + Latitude of McAlister Auditorium

Scanning Options

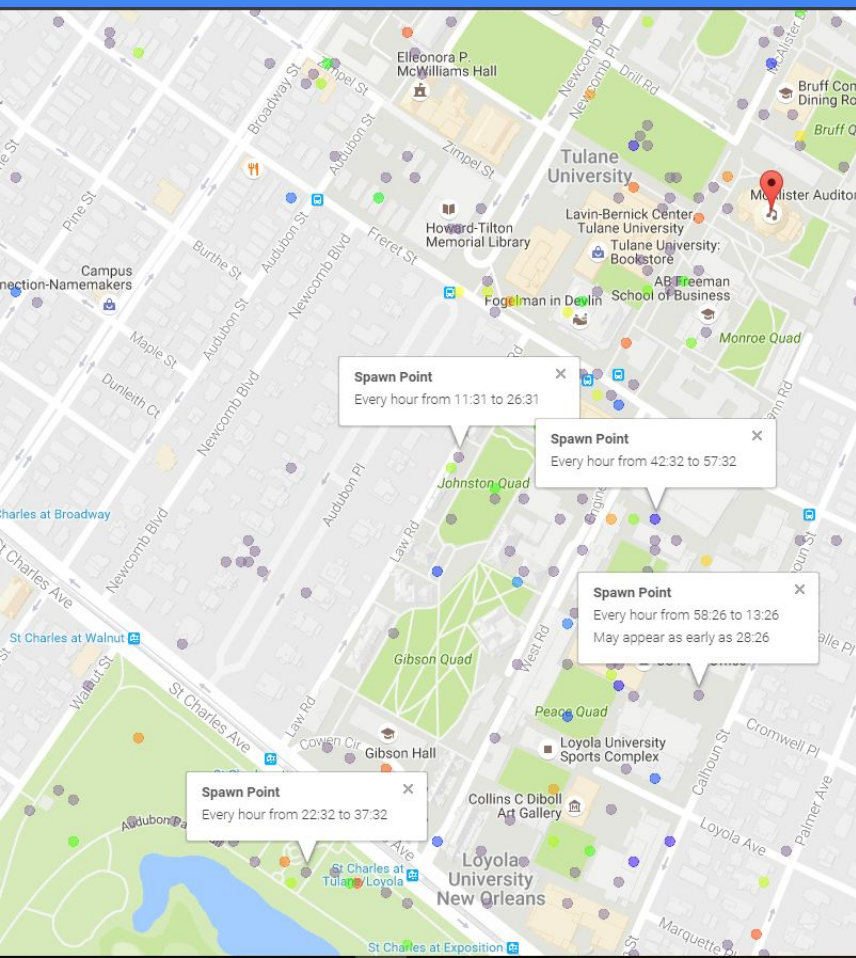
9

Scans Each Direction



1 Week or 168 Hours of Scanning Later, Two Main Features;

1. Spawn Points



[Close this tab](#)

Lat: 29.9346485

Long: -90.1248953

Appearances: 20

Times:

13:25:29 26 Sep 2016

0:25:29 26 Sep 2016

21:25:29 25 Sep 2016

20:25:29 25 Sep 2016

18:25:29 25 Sep 2016

17:25:29 25 Sep 2016

15:25:29 25 Sep 2016

10:25:29 25 Sep 2016

1:25:29 25 Sep 2016

22:25:29 24 Sep 2016

21:25:29 24 Sep 2016

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22:25:29 23 Sep 2016

17:25:29 23 Sep 2016

15:25:29 23 Sep 2016

22:25:29 22 Sep 2016

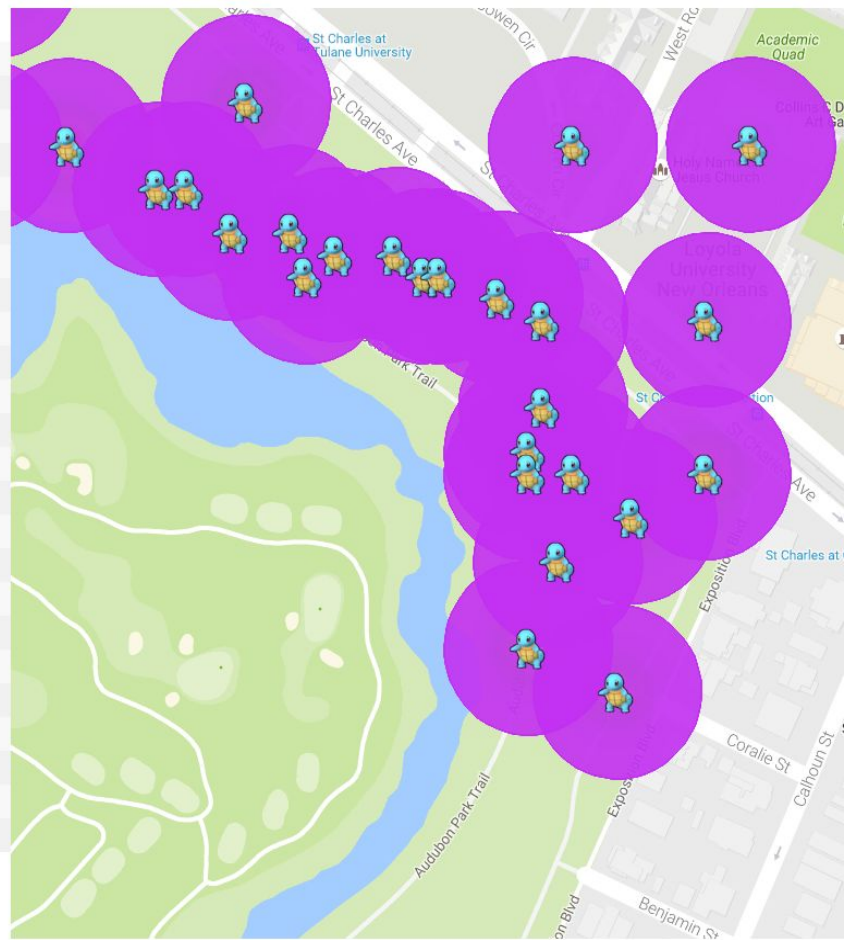
17:25:29 22 Sep 2016

10:25:29 22 Sep 2016

10:25:29 21 Sep 2016

0:25:29 21 Sep 2016

2. Nests



Machine Learning Applications



Defining “Audubon Park” Longitude/Latitude

1 - Latitude: 29.936078, Longitude: -90.125425

2 - Latitude: 29.933144, Longitude: -90.121228

3 - Latitude: 29.932750, Longitude: -90.128169

4 - Latitude: 29.30600, Longitude: -90.122590

ROUGHLY


If(Latitude Input) between {29.30600, 29.936078}

AND(Longitude Input) between {-90.121228, -90.127169}

Input = Audubon, Else Input=Non-Audubon

Sample Data Training

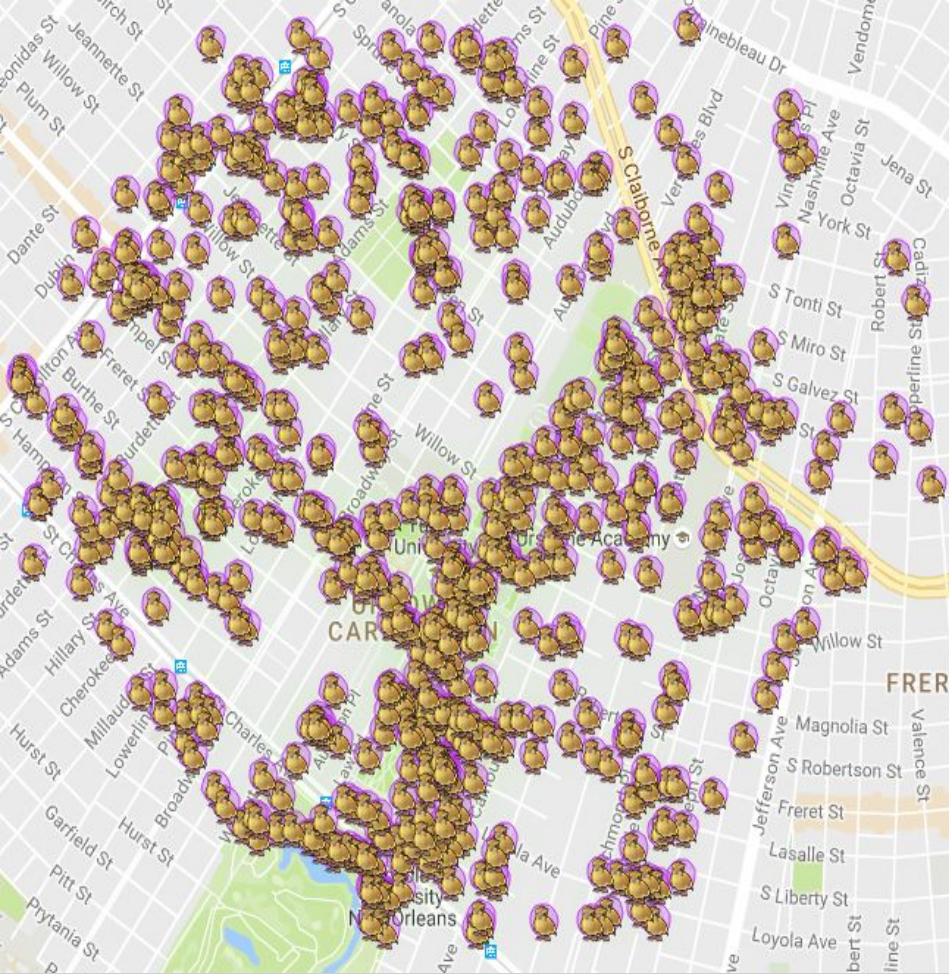
Lat: 29.9346485
Long: -90.1248953
Appearances: 20
Times:
13:25:29 26 Sep 2016
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10:25:29 21 Sep 2016
0:25:29 21 Sep 2016



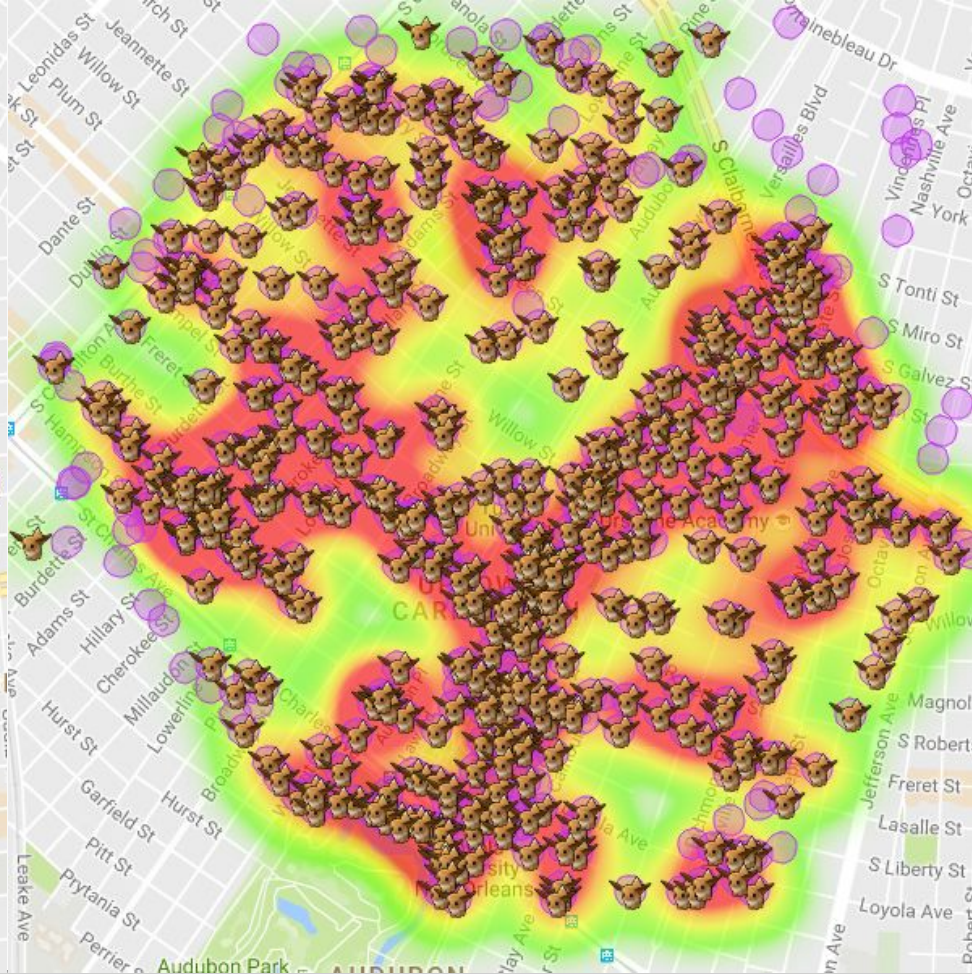
Spawn Ratios are remarkably similar across time.

By taking a portion of our data and using it as sample data to learn from, we can predict the likelihood of a spawn occurring in Audubon Park based on species.

Our sample data consists of the spawns from 12:00AM September 21st until 11:59PM September 23rd. Using this data, we can train our classifier to calculate the likelihood a spawn is inside or outside of Audubon Park based on the species.



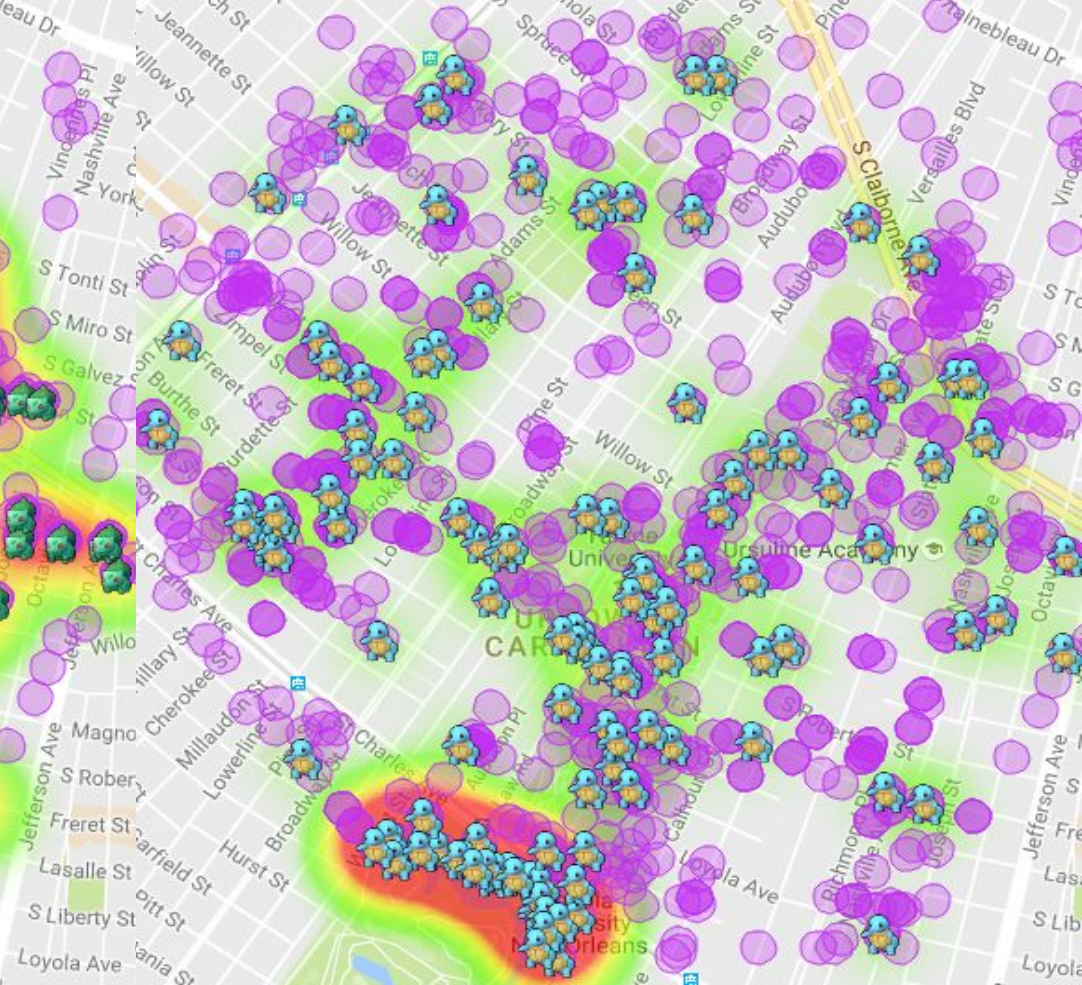
type	audubon	non-audubon	occurrences	ratio	percentage
pidgey	514	15318	15832	0.032466	3.25%



type	audubon	non-audubon	occurrences	ratio	percentage
eevee	129	2097	2226	0.057951	5.79%



type	audubon	non-audubon	occurences	ratio	percentage
bulbasaur	8	205	213	0.037559	3.76%



type	audubon	non-audubon	occurences	ratio	percentage
squirtle	370	170	477	0.775681	77.57%

Results/Conclusions

Example A

Spawn Point ✕
Every hour from 44:37 to 59:37

Example B

Spawn Point ✕
Every hour from 52:23 to 07:23
May appear as early as 22:23

- Pokemon spawn via an hourly timer at specific locations known as “spawn points”.
 - All spawn points operate on a 60 hour timer.
 - Each spawn point will spawn a creature at a specific minute combination every hour for fifteen hours straight when it “starts”.
 - Spawn points can be “confident” (example A) or “random” (example B).
 - Certain spawn points have different tendencies to spawn different creatures.
 - Spawn points in an area tend to spawn similar species.
- Confirms Audubon Park being a Squirtle Nest.
 - 77.57% (370 / 477) of all Squirtles spawned inside the “Audubon Park” defined area.
 - Of the 61,246 OTHER spawn occurrences, no species exceed 10% of their spawns in the Audubon Park area.