

# Cloud Computing: Assignment 1 Tweet Map

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## Group Members

Net ID	Name
jds797	Jay Dharmendra Solanki
akb501	Aniket Krishna Bhandarkar

This Assignment is in Python. There are 3 modules in the project:

1. Web Application which is scaled by deploying it to AWS ElasticBeanstalk in Django Framework
2. AWS Elastic Search for finding text quickly
3. Python code to add tweets in the AWS Elastic Search in Real Time

Following are the dependencies for Web Application

1. Django Framework
  - o Install using `pip install django`
2. wheel
  - o Install using `pip install wheel`
3. certifi
  - o Install using `pip install certifi`
4. elastic search
  - o Download the Elasticsearch executable to run locally. To run on AWS ElasticBeanstalk or EC2, start an AWS Elastic Search Cluster on AWS
  - o Install using `pip install elasticsearch`
5. Google Maps Javascript API
  - o Get from <https://developers.google.com/maps/documentation/javascript/>
6. Bootstrap
  - o Get from <http://getbootstrap.com/>
7. jQuery v1.x
  - o Get from <https://code.jquery.com/> by selection `jQuery 1.x`

To get started with the application there are some steps to be followed

1. Download/Clone the project
2. Run
  - o `python manage.py migrate`

3. Make sure you have started ElasticSearch service at localhost or at AWS. If you run on AWS make sure to get the url for accessing the elastic search. Then run
  - o `python populate_index.py <index_name> <host for elasticsearch>`  
where replace `<index_name>` with the name of the index you want to create and replace `<host for elasticsearch>` with the Elastic Search Host url (pass an empty string ("") for localhost)

This may take a while and after that your Elasticsearch index will be created and populated

Schema used for Elasticsearch:

```
location: geo_point  
tweet: string
```

4. Open Assignment1/settings.py and change the variables `INDEX_NAME` and `HOST_NAME` as per your configuration
5. To run it locally, run

- o `python manage.py runserver`

The web application will be accessible from `localhost:8000`

To run on ElasticBeanstalk make sure you have installed EB cli. Follow the steps from <http://docs.aws.amazon.com/elasticbeanstalk/latest/dg/create-deploy-python-django.html#python-django-deploy>.

- o `eb init -p python2.7 cloud-assignment`
- o `eb init`
- o `eb create django-env`
- o `eb open`

After the above steps the website will open at

`http://django-env.m3txbp3s2c.us-west-2.elasticbeanstalk.com/`

**VERY IMPORTATNT NOTE:** While doing `eb deploy` OR `eb create django-env` it is **VERY IMPORTANT** to commit the changes made, otherwise new changes won't be deployed. Also dont forget to do `python manage.py collectstatic` if you add any new static files before committing.

6. For live tweets make sure you have your own Twitter

- i. `consumer_key`
- ii. `consumer_secret`
- iii. `access_token`
- iv. `access_token_secret`

You can get it from <https://apps.twitter.com/>. Then install

```
pip install certify tweepy elasticsearch
```

Once you have the credentials. Start an EC2 server and make a cronjob for

```
python live_elastic_search.py <index_name> <host of elastic search>
```

to run it with the index name and host of elastic search, it will populate the index in real time and the web application will use the indexed data.

# Features

This project gives 2 search functionalities

1. Search tweets for specific keywords and visualize on a World Map
2. Click on Map to get a location and search tweets within 'N' KMs from that selected point using geo\_spatialSearch

# Output

## Home Page



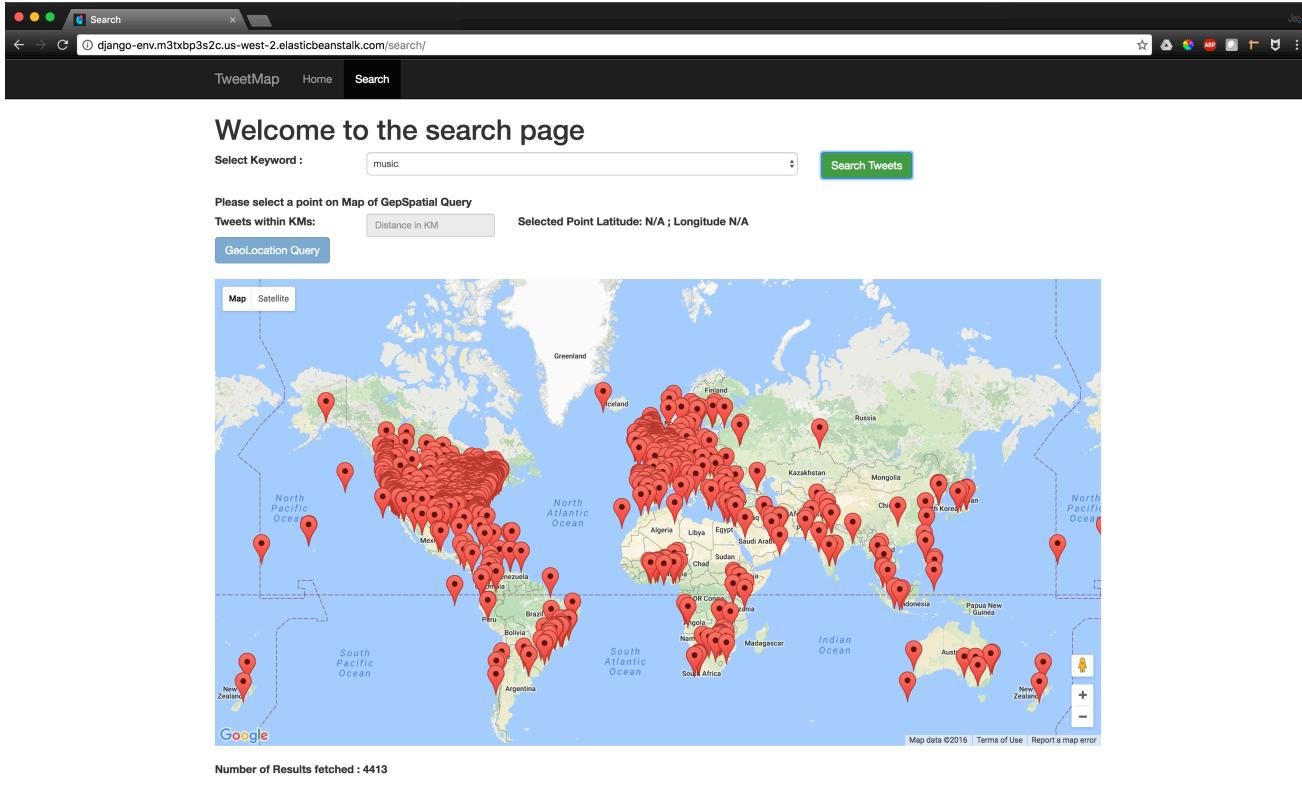
## Cloud Assignment : TweetMap

This assignment uses Elastic search and shows tweets on a google Map.

## AWS Elastic Search

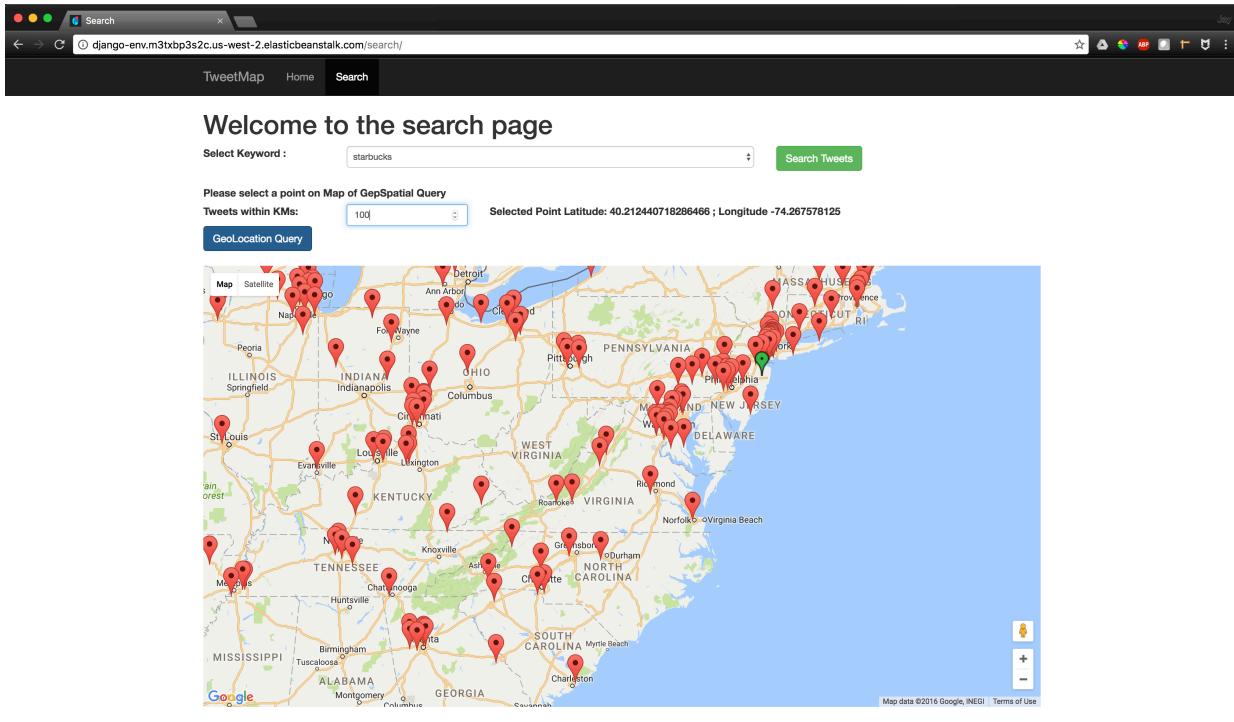
A screenshot of the AWS Elastic Search console. The URL in the address bar is "https://us-west-2.console.aws.amazon.com/es/home?region=us-west-2#jds797:dashboard". The page title is "jds797". On the left, there is a sidebar with "Dashboard", "My domains", and "jds797" selected. At the top right, there are user details: "Jay Dharmendra Solanki", "Oregon", and "Support". Below the sidebar, there are buttons for "Configure cluster", "Modify access policy", and "Manage tags". The main content area shows the domain status as "Active" and the Elasticsearch version as "2.3". It provides the endpoint "search-jds797-gr2rzisoplktc2g7orat65jfc.us-west-2.es.amazonaws.com", the Domain ARN "arn:aws:es:us-west-2:779752491908:domain/jds797", and the Kibana URL "search-jds797-gr2rzisoplktc2g7orat65jfc.us-west-2.es.amazonaws.com/\_plugin/kibana/". There are tabs for "Cluster health", "Indices", and "Monitoring", with "Indices" currently selected. Under the "Indices" tab, there is a section for the "tweet-index" with a count of 6739, a size of 2.55 MB, a query total of 0, and a "Mappings" link. At the bottom, there is a link to "Delete Elasticsearch domain".

## Keyword Search Output



## GeoSearch Query

The green marker is what User Selects and the distance will be calculated from the green marker



## GeoSearch Query Output

Welcome to the search page

Select Keyword : starbucks

Search Tweets

Please select a point on Map of Geospatial Query

Tweets within KM's: Distance in KM Selected Point Latitude: N/A ; Longitude N/A

GeoLocation Query

Map Satellite

Number of Results fetched : 74

## EC2 instance for running Live Tweet input

AWS Services Edit

EC2 Dashboard

Events

Tags

Reports

Limits

INSTANCES

Instances

Spot Requests

Reserved Instances

Scheduled Instances

Dedicated Hosts

IMAGES

AMIs

Bundle Tasks

ELASTIC BLOCK STORE

Volumes

Snapshots

NETWORK & SECURITY

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

LOAD BALANCING

Load Balancers

Target Groups

AUTO SCALING

Launch Configurations

Auto Scaling Groups

COMMANDS

Command History

Documents

Managed Instances

Feedback English

Launch Instance Connect Actions

Filter by tags and attributes or search by keyword

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS	Public IP	Key Name	Monitoring
django-env	i-2b08f674	t2.micro	us-west-2b	terminated		None		jds797_bigdata	disabled	
	i-2e01ff71	t2.micro	us-west-2b	running	2/2 checks ...	None	ec2-54-149-105-141.us... ec2-54-149-105-141.us... ec2-54-149-105-141.us...	54.149.105.141 54.187.14.194 54.187.14.194	jds797_bigdata	disabled
	i-d604fa89	t2.micro	us-west-2b	running	2/2 checks ...	None			jds797_bigdata	disabled

Instance: i-2e01ff71 Public DNS: ec2-54-149-105-141.us-west-2.compute.amazonaws.com

Description Status Checks Monitoring Tags

Instance ID	i-2e01ff71	Public DNS	ec2-54-149-105-141.us-west-2.compute.amazonaws.com
Instance state	running	Public IP	54.149.105.141
Instance type	t2.micro	Elastic IPs	
Private DNS	ip-172-31-34-34.us-west-2.compute.internal	Availability zone	us-west-2b
Private IP's	172.31.34.34	Security groups	launch-wizard-5, view rules
Secondary private IP's		Scheduled events	No scheduled events
VPC ID	vpc-85f913e1	AMI ID	amzn-ami-hvm-2016.09.0.20160923-x86_64-gp2 (ami-b04e92d0)
Subnet ID	subnet-d98e9f9ae	Platform	-
Network interfaces	eth0	IAM role	-
Source/dest. check	True	Key pair name	jds797_bigdata
EBS-optimized	False	Owner	779752491908
		Launch time	October 27, 2016 at 5:06:11 AM UTC-4 (less than one hour)

## Elastic Beanstalk used

The screenshot shows the AWS Elastic Beanstalk console interface. At the top, there's a navigation bar with links for AWS Services, Edit, and a user profile (Jay Dharmendra Solanki, Oregon). Below the navigation is a search bar labeled "Filter by Application Name:" and a "Create New Application" button.

The main area is titled "All Applications" and shows three entries under the "cloud-assignment" category:

- django-env** (Status: Green):
  - Environment tier: Web Server
  - Running versions: app-161027\_045105
  - Last modified: 2016-10-27 04:55:38 UTC-0400
  - URL: django-env.m3tbp3s2c.us-west-2.elasticbeanstalk.com
- django-env (Terminated)** (Status: Grey):
  - Environment tier: Web Server
  - Running versions: app-161027\_044407
  - Last modified: 2016-10-27 04:50:38 UTC-0400
  - URL: django-env.m3tbp3s2c.us-west-2.elasticbeanstalk.com
- django-tutorial** (Status: Grey):
  - No environments currently exist for this application. [Create one now.](#)
- My First Elastic Beanstalk Application** (Status: Grey):
  - No environments currently exist for this application. [Create one now.](#)

On the left side, there are sections for "Learn More", "Get Started using Elastic Beanstalk", "What Is AWS Elastic Beanstalk?", "How Does AWS Elastic Beanstalk Work?", "Command Line Interface (v3)", "Installing the AWS EB CLI", "EB CLI Command Reference", and "Get Started" (with a command-line example).

**Url for the Project on Beanstalk:** <http://django-env.m3tbp3s2c.us-west-2.elasticbeanstalk.com/>

### References

1. Tweepy Example <http://adilmoujahid.com/posts/2014/07/twitter-analytics/>
2. Bootstrap Started Tempalte <http://getbootstrap.com/examples/starter-template/>