AWS Find Missing Persons by Scanning Social Media with Amazon Rekognition Workshop

In this workshop, we'll build a solution that automatically launches and configures Amazon Rekognition, Amazon Kinesis Firehose, Amazon Simple Storage Service(S3), AWS Lambda, Amazon DynamoDB, Amazon Simple Notification Service (SNS), & Amazon Elastic Cloud Compute (EC2) to collect, store, process, and analyze data to search for missing persons on social media data streams. The diagram below presents the Find Missing Persons by Scanning Social Media with Amazon Rekognition architecture you can deploy in minutes using this guide and accompanying AWS CloudFormation template.
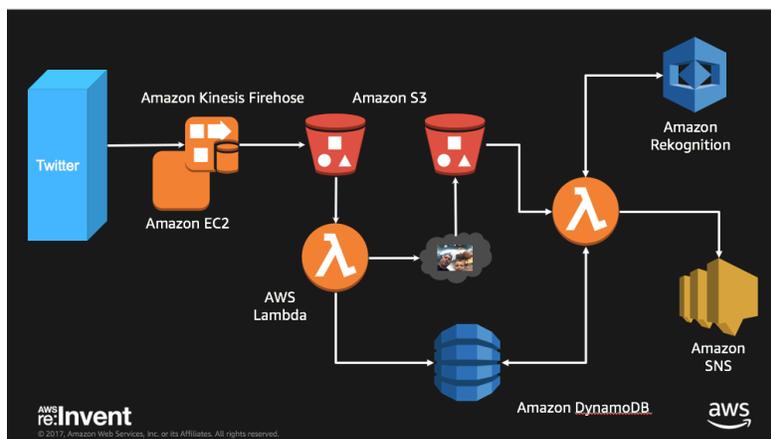
1. This solution uses python code on an EC2 instance to listen to Twitter feed to capture images from that feed.
2. The EC2 instance pushes image metadata in JSON form to S3 via an Amazon Kinesis Firehose.
3. A Lambda function is invoked based on PUT operation to the initial S3 bucket that launches Rekognition API to analyze the photo and store the data in a result S3 bucket & DynamoDB
4. A second Lambda function fires based on PUT operation to the result S3 bucket this fires a SNS message to monitoring users
5. If you choose to persist raw data, AWS Lambda decodes the data and puts it into Amazon Kinesis Firehose which delivers it to Amazon S3.

What you'll accomplish:

Deploy Find Missing Persons by Scanning Social Media with Amazon Rekognition
using [AWS CloudFormation](#). The CloudFormation template will automatically launch and configure the components necessary to consume and analyze streaming data.

Automatically analyze streaming data in an Amazon Kinesis Analytics application. You can customize the Amazon Kinesis Analytics application that is included with the solution.

What you'll need before starting:

1. **An AWS account:** You will need an AWS account to begin provisioning resources. [Sign up for AWS](#).
2. **Twitter Developer account and create a Twitter application with keys and tokens** https://apps.twitter.com
3. **Create SSH Key pair** unless you already have one you can use for this workshop

Skill level: This solution is intended for IT infrastructure professionals who have practical experience with streaming data and architecting on the AWS Cloud.

What We'll Cover

The procedure for deploying this architecture on AWS consists of the following steps. For detailed instructions, follow the links for each step.

Step 1. Pre-Workshop Setup Steps
1. Set up your Twitter Application (Required step)
   a. Goto https://apps.twitter.com
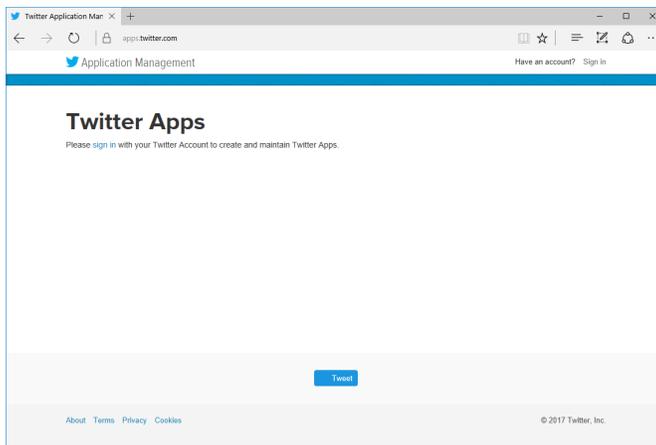
b. Login if you have an account, otherwise sign up for a new account. Note you will need your mobile number included in your account profile to build Twitter apps.
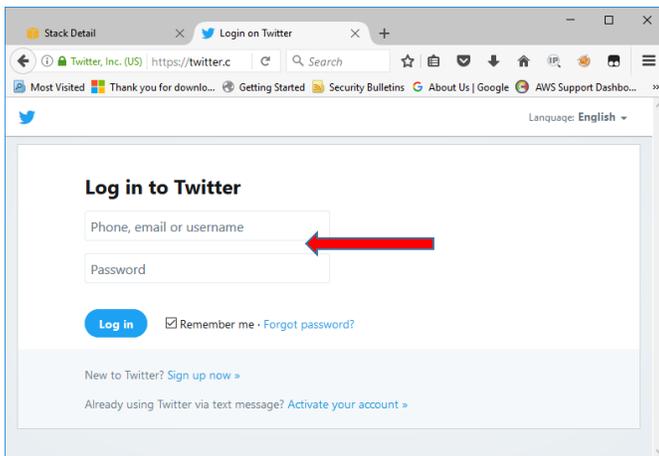
c. Select Create New App
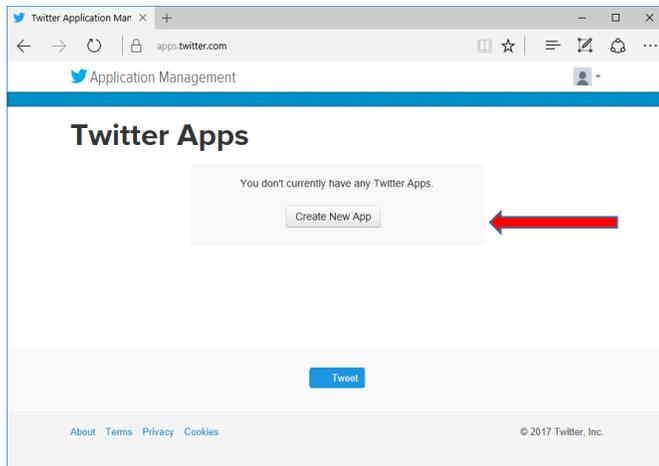
d. Provide a unique name such as FindMissingPersonsRekognitions & add your initials etc
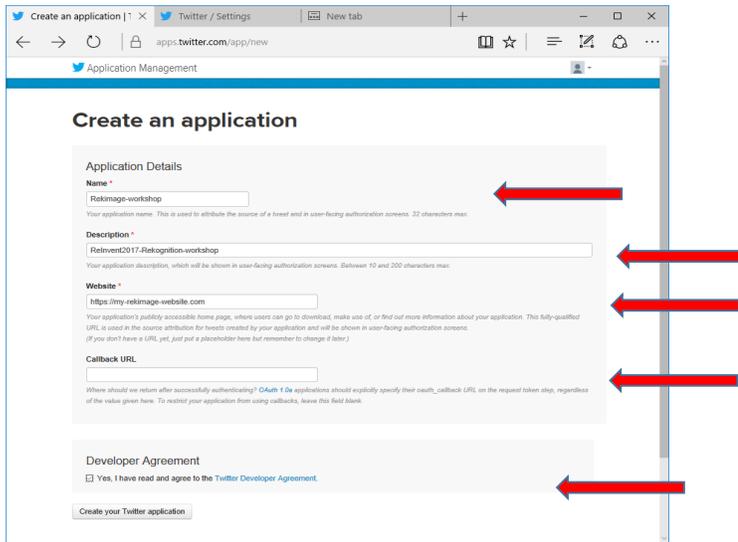
e. Next you'll get the details from your new app. Key data points to collect are consumer key/api highlighted by the red arrow below.
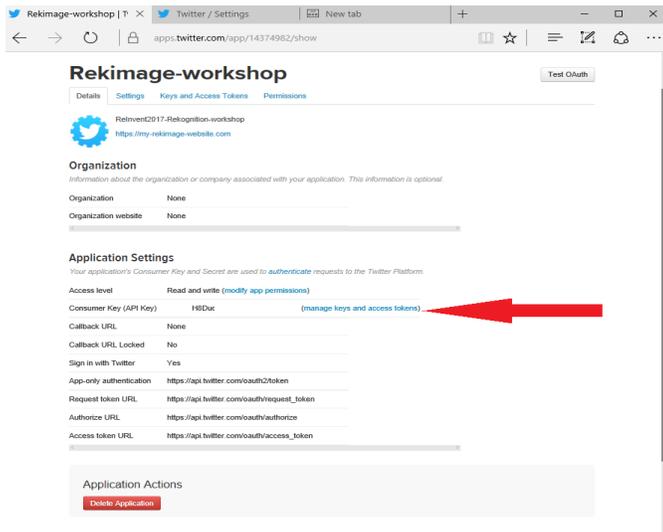
f. Click on the Key & Access tokens tab
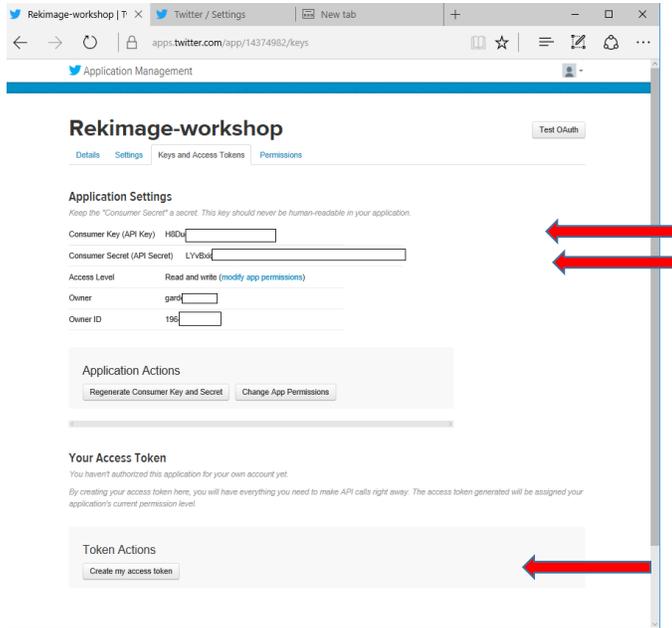
g. To generate tokens – click on the create my access token then capture the details such as shown in the screen below
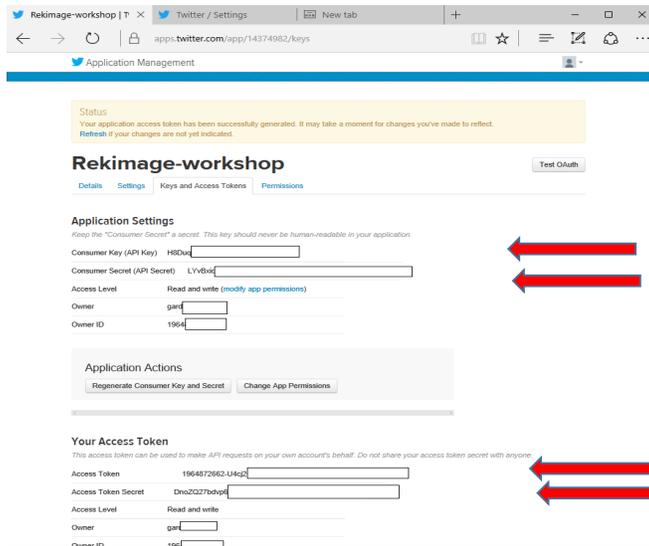
h. Capture your API Key & Secret and Access Token and Secret for later use in Notepad or text editor

2. Create a new EC2 Key Pair - For this workshop, you will need to create an EC2 instance using an SSH keypair. *If you already have a SSH key pair in Ireland region Please skip this section and go onto the next.* The following steps outline creating a unique SSH keypair for you to use in this workshop.

   a. Sign into the AWS Management Console and open the Amazon EC2 console at https://console.aws.amazon.com/ec2.

   b. In the upper-right corner of the AWS Management Console, confirm you are in the desired AWS region (e.g., Ireland).

   c. Click or type EC2 on search line then click on EC2 service from the menu.

   d. Click on Key Pairs in the NETWORK & SECURITY section near the bottom of the leftmost menu. This will display a page to manage your SSH key pairs.
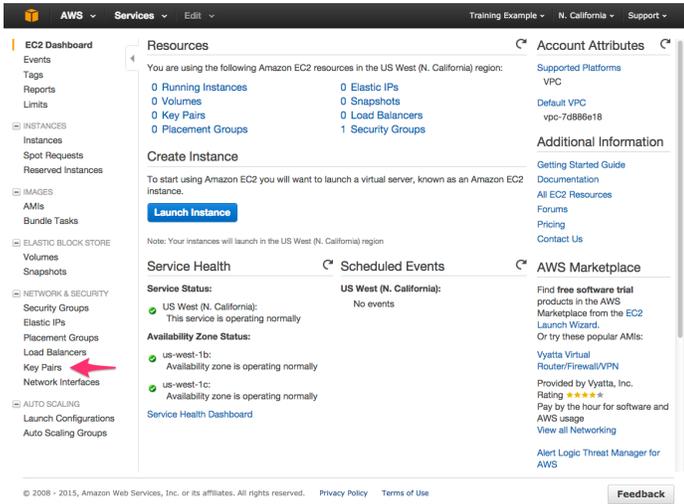
e. To create a new SSH key pair, click the Create Key Pair button at the top of the browser window
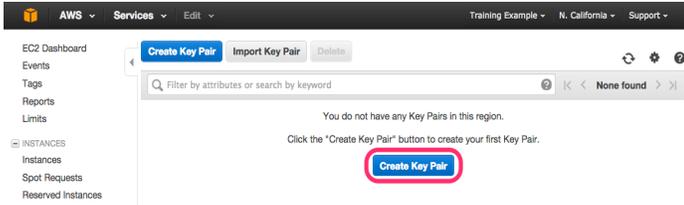
f. In the resulting pop up window, type [First Name]-[Last Name]-Rekognition into the Key Pair Name: text box and click Create.
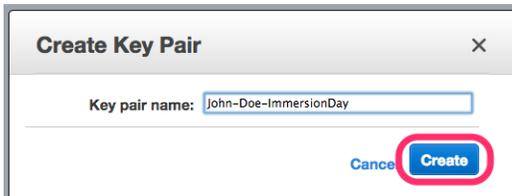
g. The page will download the file "[Your-Name]-Rekognition.pem" to the local drive. Follow the browser instructions to save the file to the default download location.

h. Remember the full path to the file .pem file you just downloaded. You will use the Key Pair you just created to manage your EC2 instances for the rest of the lab

Step 2 Launch the Stack

This automated AWS CloudFormation template deploys Find Missing Persons by Scanning Social Media with Amazon Rekognition on the AWS Cloud. Please make sure that you've configured IAM roles before launching the template.

Note

You are responsible for the cost of the AWS services used while running this solution. We are providing $25 AWS credit which should more than cover those cost during the workshop.

1. Log in to the AWS Management Console and click the button below to launch the rekognition-workshop AWS CloudFormation template.

   Launch
   Solution

   You can also download the template as a starting point for your own implementation.

2. Be sure to launch the template in the EU (Ireland) Region (eu-west-1).
3. On the **Select Template** page, verify that you selected the correct template and choose **Next**.
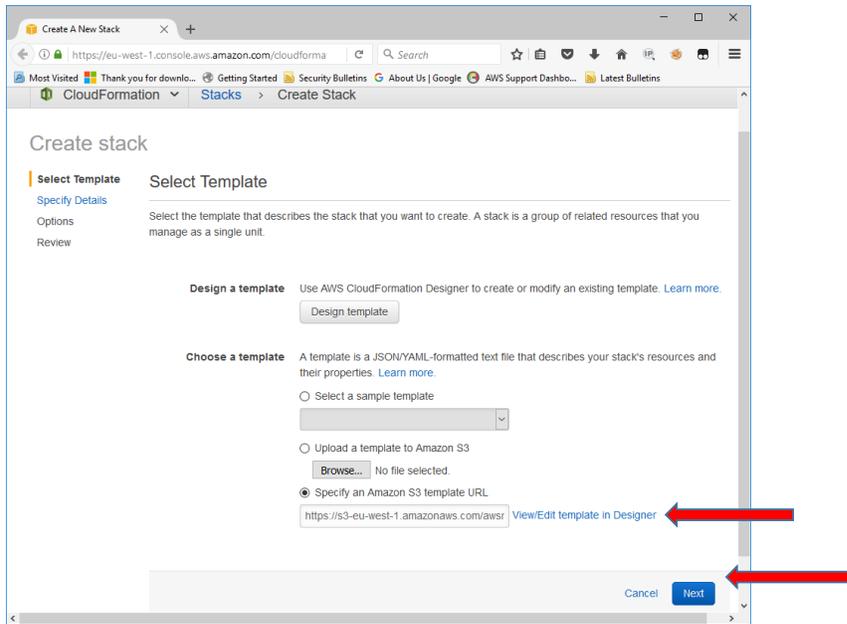
4. On the **Specify Details** page, assign a name to your Find Missing Persons by Scanning Social Media with Amazon Rekognition solution stack. This stack name should be all lower case characters & numbers and be short since we use it for bucket names etc.
5. Under **Parameters**, review the parameters for the template, and modify them as necessary. This solution uses the following default values.

Parameter	Default	Description
StackName	`twtrrekog`	Name of the Stack to launch
EmailAddress	`<Requires input>`	Email address to use during workshop so you can receive emails notifications.
InstanceType	`T2.Micro`	Select your instance type. Recommend T2.Micro
KeyName	`<Requires input>`	SSH key for Ireland region to use during the workshop. Without this key you will not be able to connect to your instance.
SSHLocation	`0.0.0.0/0`	The IP address range that can be used to SSH to the EC2 instances
TwitterConsumerKey	`<Requires input>`	Twitter Consumer Key, as generated by dev.twitter.com. Part of the pre setup steps

Comment [Office1]: What about ReferencePhotoFilename

TwitterConsumerSecret	*<Requires input>*	Twitter Consumer Secret, as generated by dev.twitter.com Part of the pre setup steps
TwitterToken	*<Requires input>*	Twitter Access Token, as generated by dev.twitter.com. Part of the pre setup steps
TwitterTokenSecret	*<Requires input>*	Twitter Access Token Secret, as generated by dev.twitter.com Part of the pre setup steps

It should look something like the picture below
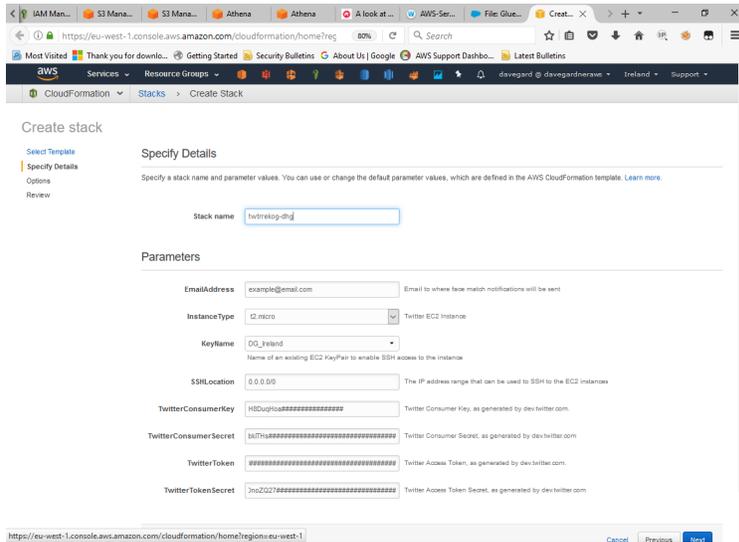
6. Verify that you modified the correct parameters for your chosen destination.
7. Choose **Next**.
8. On the **Options** page, choose **Next**.
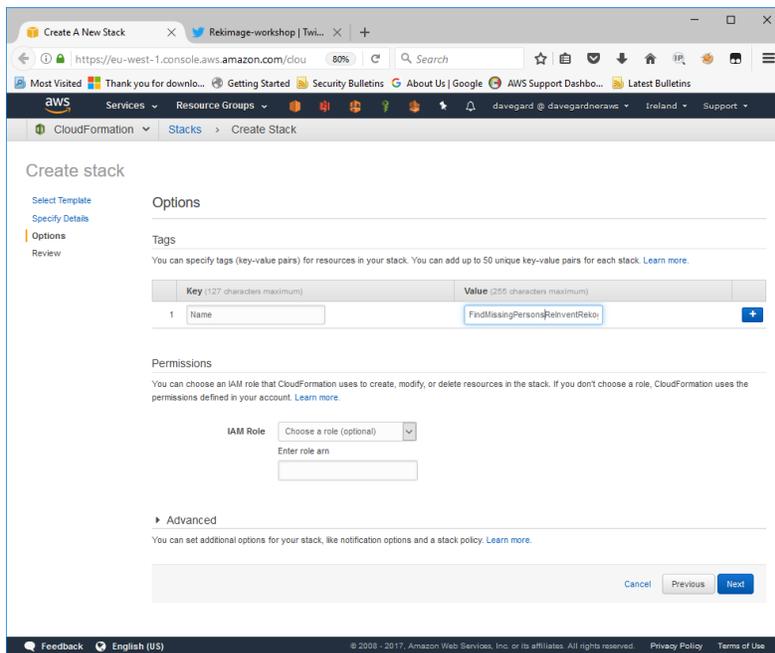
9. On the **Review** page, review and confirm the settings. Be sure to check the box acknowledging that the template will create AWS Identity and Access Management (IAM) resources.
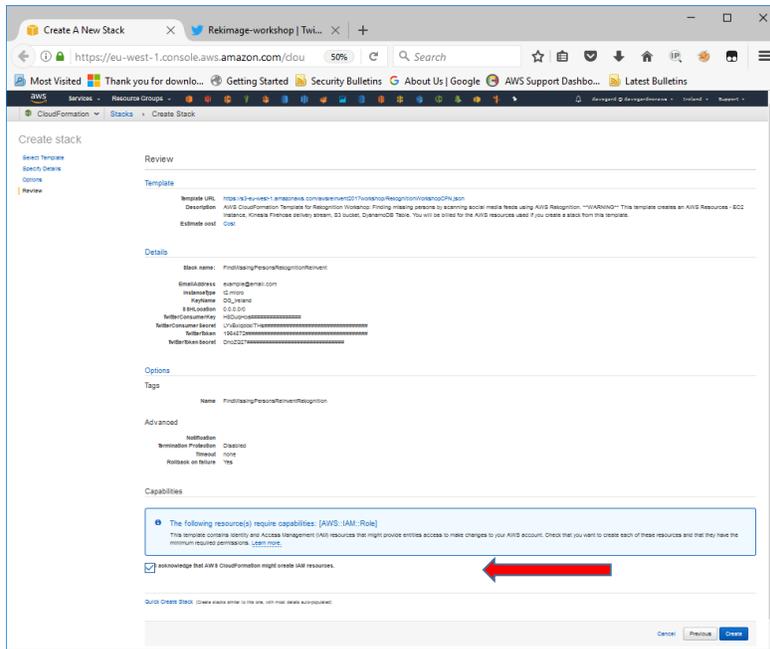
10. Choose **Create** to deploy the stack.

You can view the status of the stack in the AWS CloudFormation console in the Status column. You should see a status of **CREATE_COMPLETE** in roughly five (5) minutes.

Step 3. Validate and Start the Application

Once the stack is created, complete the following steps.

1. Navigate to the stack **Outputs** tab.
2. Note the name of the EC2 Instance and capture the Public IP address
3. Open SSH connection to your instance (if using windows you'll need putty & puttygen to connect)
4. Goto /home/ec2-user/rekognition-workshop directory
5. Run "aws configure" to populate aws credentials on to the EC2 instance.

Parameter	Default	Description

Deleted: Make sure to put a note in the instructions to use "eu-west-1" as the region

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AWS Access Key ID	****************A5ZA	Access key to IAM user, retrieved from the IAM Console
AWS Secret Access Key	****************8fwG	Secret Access key to IAM user, retrieved from the IAM Console
Default region name	eu-west-1	Region setting
Default output format	table	Format of output results in the AWS CLI

```
[ec2-user@ip-172-31-2-51 rekognition-workshop]$ aws configure
AWS Access Key ID [****************A5ZA]:
AWS Secret Access Key [****************8fwG]:
Default region name [eu-west-1]:
Default output format [table]:
```

6. Run the python source code to start streaming twitter data. Monitor the KFH delivery stream to see feeds stored in destination bucket.

```
[ec2-user@ip-172-31-2-51 rekognition-workshop]$ python twitter_streaming.py
```

Step 4. Start Twitter Streaming Data

Now that you have all the infrastructure set up and verified let's start the Twitter feed and run the application to search for missing persons.

1. First step
2. Second Step
3.

Step 5. Clean up

Once complete with the workshop to clean up the environment goto Cloudformation and delete the rekognition-workshop stack by placing a check mark by it and selecting the delete action. This will remove the resources created in the workshop.