DAY 1

AI ON AWS

- Our Brain always analyse the things we see around and also with past experiences.
- eyes of computer ⟶ web cam [computer vision] Webcam is never intellegent We need to make it intellegent.
- ears of computer ⟶ microphone
- mouth of computer ⟶ speaker
- model is created using experience.
- We need to provide lots of datasets to train the model so that will gains experience.
- To train the model we require a particular algorithm, ram, cpu and gpu.
- Aws provides you AI services eg. pretained model to predict/detect the object.
- when model predicts the thing is a particular object eg. table, car, human then that is known as object detection.
- when model predicts the thing is a specific object eg. Tesla car, Amit boy, a elephant then that is known as object Recognition.
- for object Recognition we have Amazon Rekognition
- for Speech Recognition we have Amazon Transcribe
- for Text to speech we have Amazon Poly

- enter into Amazon Rekognition and click on try demo you will find object and scene detection.
- when the model/human analyze the object they always analyze with the confidence score. How much model/human confident about that particular object.
- creating the best model means you should have largest amount of data and keep retraining the model.
- **Prequisites** :-
  → Download python Anaconda
  anaconda.com/products/individual ← Visit site
- Boto3 (previous version Boto) ~~Aa~~ library from python that helps you to contact any services through code on Aws cloud.

1.) Web cam click a photo.

Python —opencv-python→ Web cam

```
Pip install opencv-python
import cv2
```

Installing library
importing cv2 library

```
cap = cv2.VideoCapture(0)

ret, photo = cap.read()
```

if ret's value is True the photo is clicked.

```
myphoto = cv2.imread('amit.jpg', photo)
```

Will save photo in your hard drive

```
cap.release()
```

→ camera light will be off

2.) upload photo in Aws S3.

- In S3, the folder is known as bucket. 

`import boto3` ⟶ importing Boto3

`s3 = boto3.resource('s3')`

↳ using s3 resource

- But, Before proceeding further you need to login through Access key (username) and & secret key (password)
- You need to creat a user through IAM resource of Aws while creating IAM user you need to set some restriction so that ~~the~~ user will access only ~~throug~~ those limited services which you have restricted while creating user.
- for avoiding complication select Administration Access.

you need to instau aws (cli) through ?

`pip install aws`

- then you need to login (configure) through your command prompt.

`aws configure` ⟶ this command will provide below options to login to Aws

Aws Access Key ID : XXXX
Aws secret Access Key: XXXX
Aws Region : ap-south-1
Default output format [none]:

`s3.BUCKET(bucket).upload_file(myphoto, "file.jpg")`

↳ uploading photo to S3

- so, now you need to keep the above code in a loop.

3.) Connect Rek service.

- Rek service will go inside S3 and take that myphoto and detect the person in that image.
- Rek service is tightly coupled with S3.
- if python using Rekognition service other than S3, cloudformation, ec2, etc. then Aws treats us a ~~clied~~ client. so, we need to use client function.

```
rek = boto3.client('rekognition', region)
```

region = ap-south-1

4.) Responses

```
a = rek.detect_labels(
    Image = {
        'Bytes': b'bytes',
        'S3Object': {bucket,
        Name: upimage
        }
    },
    MaxLabels = 2,
    MinConfidence = 90
    )
```

Name of bucket

only two labels will shown

only confidence till 90% will be shown.

```
print(a)
a['Labels'][3]['Name']
>>> 'Beard'.
```

range of 5 inputs.

```
for i in range(5):
    print(a['Labels'][i]['Name'])
```

Detecting faces :-

```
b = rek.detect_faces(
        Images = {
                'S3Object': {
                'Name': upimage
                'S3Object': {
                'Bucket': bucket
                }
        },
        Attributes = ['ALL']
    )

if b['faceDetails'][0]['smile']['value'] == false:
        print("search and listen songs on spotify")
```

Amazon Poly Service

- Amazon's poly service will helps you to do text to speech.
- you need to type the text and choose the voice type and choose the language and the poly service will convert to speech.

```
import boto3
po = boto3.client('polly')
res = po.synthesize_speech(Text = "Hello all",
                           OutputFormat = mp3
res['AudioStream']
file = open('myadio.mp3', 'w')
file.write(res['Audiostream'].read())
file.close()
Ipython.display.Audio('myaudio.mp3')
```