

**Department of Information Technology**

A.Y. 2024-2025  
Class: BE-IT A/B, Semester: VIII  
Subject: Cloud Computing Lab

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**Experiment – 4: Software as a Service (SaaS)**

**Aim:** To study and Implement Software as a Service using AWS Rekognition to detect, analyze and compare images and videos. (Free Tier Cloud Platforms).

**Objective:** After experimenting, the students will be able to –

- to upload images and videos to detect them for emotional identification,
- to compare images with existing images and measure the similarity score.

**Lab objective mapped : ITDO8024.2:** To learn, simulate, and examine cloud service model and deploy IAAS, SAAS, and PAAS services over different cloud platforms.

**Prerequisite:**

An AWS account with an active subscription.

Install Visual Studio Code (For API calling and programming)

**Requirements:** Cloud Login, Desktop, Browser, Internet etc.

**Pre-Experiment Theory:**

What is Amazon Rekognition?

Amazon Rekognition is a service that makes it easy to add powerful visual analysis to your applications. Rekognition Image lets you easily build powerful applications to search, verify, and organize millions of images. Rekognition Video lets you extract motion-based context from stored or live stream videos and helps you analyze them.

Rekognition Image is an image recognition service that detects objects, scenes, activities, landmarks, faces, dominant colors, and image quality. Rekognition Image also extracts text, recognizes celebrities, and identifies inappropriate content in images. It also allows you to search and compare faces.

Rekognition Video is a video recognition service that detects activities, understands the movement of people in frame, and recognizes objects, celebrities, and inappropriate content in videos stored in Amazon S3 and live video streams. Rekognition Video detects persons and tracks them through the video even when their faces are not visible, or as the whole person might go in and out of the scene. For example, this could be used in an application that sends a real-time notification when someone delivers a package to your door. Rekognition Video allows you also to index metadata like objects, activities, scene, landmarks, celebrities, and faces that make video search easy.

**Procedure**

1. Login to AWS console

2. Move on to AWS Rekognition service console
3. Choose facial analysis feature from the left navigation panel. It allows analyzing faces in an image and receiving a JSON response.
4. Use any sample group image of your choice
5. Click the orange upload button
6. Select sample image
7. Observe result using result dropdown
8. See results for different faces
9. Use response dropdown to see JSON results.
10. Notice emotions results - It shows confidence ratings in percentage form
11. Select face comparison in the panel navigation in the left panel
12. Use single sample image
13. Click on upload option for reference face and select sample image
14. Click on orange upload button for comparison face, select another sample image
15. Notice results
16. Check response section
17. Similarity score- ranges from 1-100, threshold can be adjusted when using Rekognition API

### Post-Experiments Exercise

#### Extended Theory:

1. Image formats that Amazon Rekognition support?(select correct option)
  - JPEG
  - PNG
  - both JPEG AND PNG
2. The \_\_\_\_\_ codec is commonly used for the recording, compression and distribution of video content. [H.264, H.265, MOV, MPEG-4]
3. The video must be encoded using the H.264 codec video format for Amazon Rekognition? (select correct option)
  - A. TRUE
  - B. FALSE

#### Results/Calculations/Observations:

Fill the following observation tables-(to be written in hand)

Sr. No	Questions	Do as directed
1.	What are the most common use cases for Amazon Rekognition? Choose all correct ans	<ul style="list-style-type: none"> <li><input type="checkbox"/> Searchable Image Library</li> <li><input type="checkbox"/> Face-Based User Verification</li> <li><input type="checkbox"/> Sentiment Analysis</li> <li><input type="checkbox"/> Facial Recognition</li> <li><input type="checkbox"/> Image Moderation</li> </ul>

3.	<p>The most common use cases for Rekognition Video include</p> <p>1)Search Index for video archives and 2) Easy filtering of video for explicit and suggestive content</p>	<input checked="" type="checkbox"/> TRUE <input type="checkbox"/> FALSE
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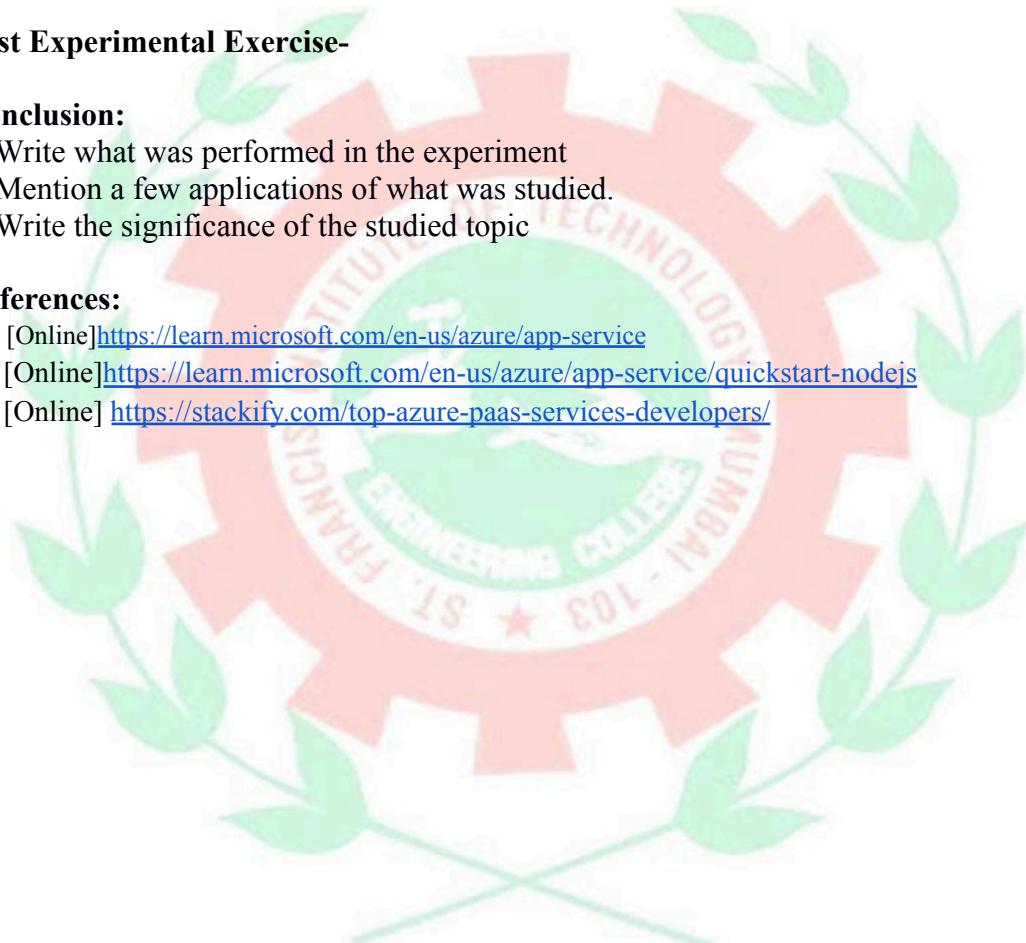
### Post Experimental Exercise-

#### Conclusion:

1. Write what was performed in the experiment
2. Mention a few applications of what was studied.
3. Write the significance of the studied topic

#### References:

- [1] [Online]<https://learn.microsoft.com/en-us/azure/app-service>
- [2] [Online]<https://learn.microsoft.com/en-us/azure/app-service/quickstart-nodejs>
- [3] [Online] <https://stackify.com/top-azure-paas-services-developers/>



## 1. Dashboard of Amazon Rekognition

The screenshot shows the Amazon Rekognition dashboard. On the left, a sidebar lists various services: Custom Moderation, Bulk Analysis, Custom Labels (selected), Demos (Label detection, Image properties, Image moderation, Facial analysis, Face comparison, Face liveness, Celebrity recognition, Text in image, PPE detection), and Video Demos (Stored Video Analysis, Streaming Video Events). The main content area features a banner for 'Amazon Rekognition' with the tagline 'Deep learning-based visual analysis service'. It highlights 'Leverage proven image and video analysis', 'Detect objects unique to your business', and 'Integrated with AWS Services'. There are also 'Try Demo' and 'Download SDKs' buttons.

## 2. Facial Analysis on multiple faces together

The screenshot shows the 'Facial analysis' section of the Amazon Rekognition dashboard. The sidebar is the same as the main dashboard. The main area shows a photo of three people with their faces detected by blue bounding boxes. Below the photo, there are buttons for 'Choose a sample image' and 'Use your own image' with a 'Upload or drag and drop' button. To the right, a 'Results' panel displays the following analysis for the first face:

Attribute	Score
looks like a face	99.9 %
appears to be male	97.6 %
age range	18 - 22 years old
smiling	99.8 %
appears to be happy	100 %
wearing glasses	99.9 %

## 3. Label Detection

The screenshot shows the 'Label detection' section of the Amazon Rekognition dashboard. The sidebar is the same as the main dashboard. The main area shows a photo of a city built on a hillside with its buildings labeled. Below the photo, there are buttons for 'Choose a sample image' and 'Use your own image'. To the right, a 'Results' panel displays the following analysis for the image:

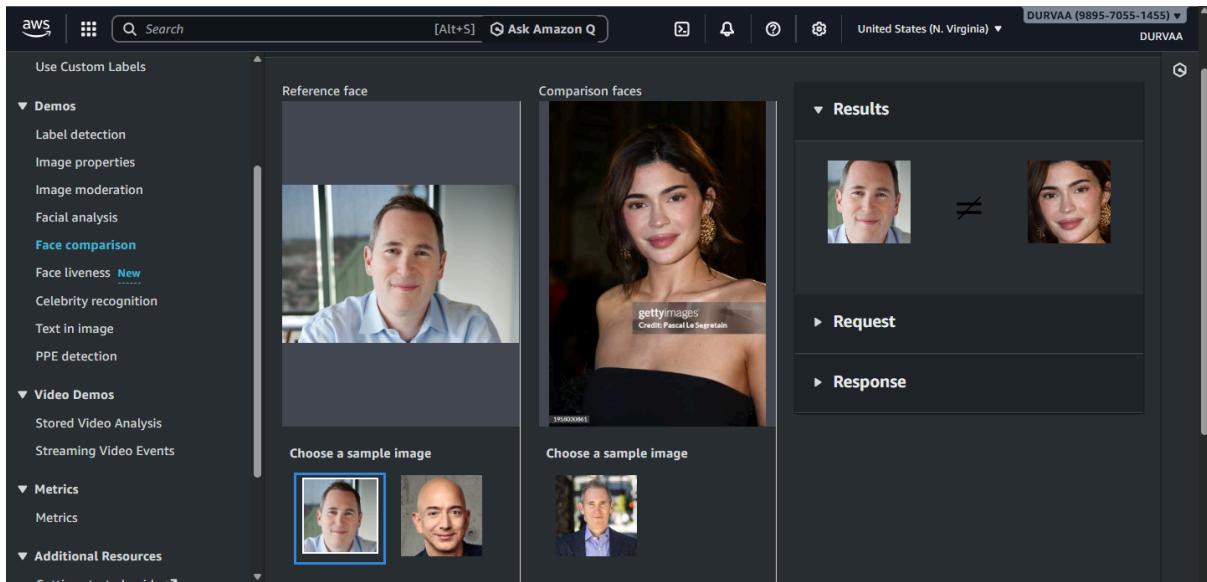
Label	Score
Architecture	99.7 %
Building	99.7 %
Outdoors	98.8 %
Nature	98.7 %
Castle	91 %
Fortress	91 %

## 4. Image properties

## 5. Image Moderation

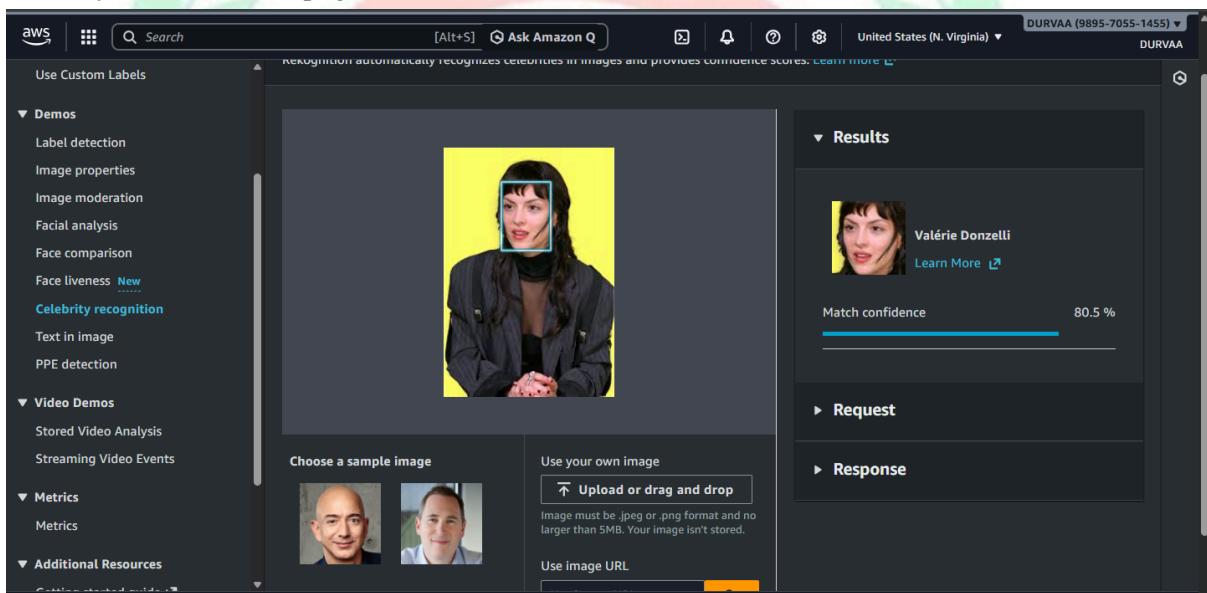
## 6. PPE Detection

## 7. Face Comparison



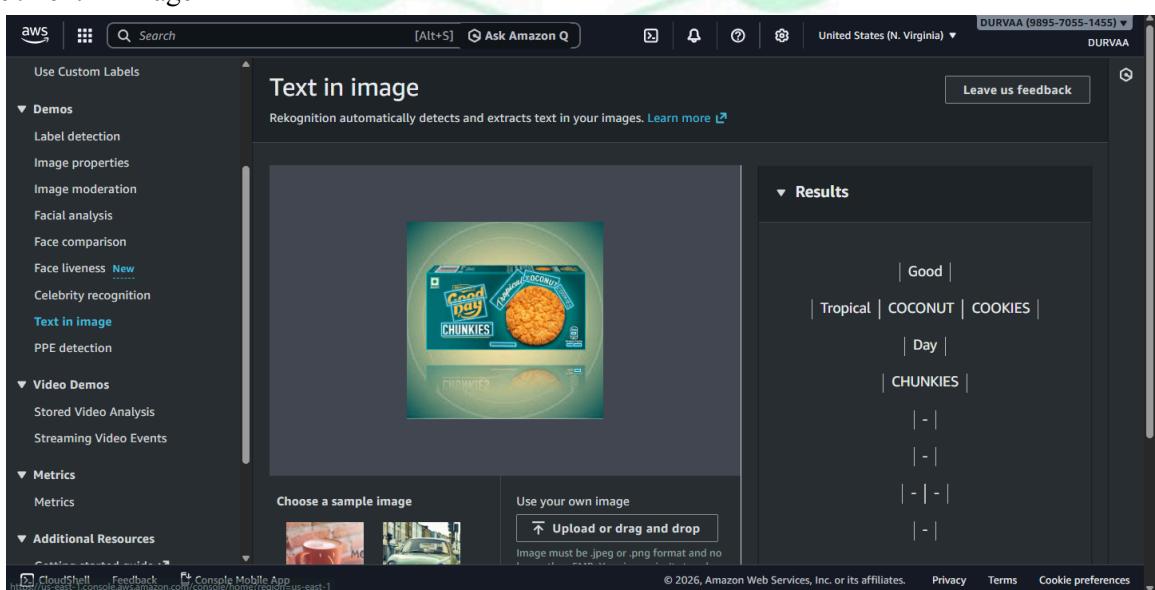
The screenshot shows the AWS Rekognition Face Comparison demo. On the left, a sidebar lists various analysis options: Label detection, Image properties, Image moderation, Facial analysis, Face comparison (which is selected and highlighted in blue), Face liveness (New), Celebrity recognition, Text in image, PPE detection, Video Demos (Stored Video Analysis, Streaming Video Events), Metrics (Metrics), and Additional Resources. The main area is titled 'Reference face' and shows a portrait of a man. To the right, under 'Comparison faces', is a portrait of a woman. Below these are two 'Choose a sample image' sections, each showing a portrait of a man. On the far right, the 'Results' section displays the comparison results with two small images and a 'Request' and 'Response' button.

## 8. Celebrity Detection on a .png file



The screenshot shows the AWS Rekognition Celebrity recognition demo. The sidebar is identical to the previous demo. The main area displays a portrait of a woman with a blue bounding box around her face. Below this are 'Choose a sample image' and 'Use your own image' sections. The 'Use your own image' section includes an 'Upload or drag and drop' button and a note that the image must be in .jpg or .png format and no larger than 5MB. The 'Results' section on the right shows a match with 'Valérie Donzelli' with a match confidence of 80.5%.

## 9. Text in Image



The screenshot shows the AWS Rekognition Text in Image demo. The sidebar is identical. The main area displays a box of 'Good Day' Chunkies Tropical Coconut Cookies. The 'Results' section on the right shows the detected text: 'Good Day', 'Tropical COCONUT COOKIES', 'CHUNKIES', and several lines of hyphens indicating additional text.