

Cloud Technology: AWS Rekognition

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BE BOUNDLESS



1

Introduction to AWS Rekognition

What is AWS Rekognition?

- > **AWS Rekognition provides machine learning solutions on the cloud; it provides a variety of APIs that allow developers to use AI technologies without machine learning expertise.**
- > **It supports most of the common programming languages and offers an SDK for fast development.**

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2

History of the technology

Are there any alternatives?

- > **There are many alternatives to AWS Rekognition.**
- > **Microsoft Azure Cognitive Services**
- > **Google Cloud Vision API**

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3

History of the technology(cont.)

What was the motivation behind this idea?

- > **There are many alternatives to AWS Rekognition.**
- > **Microsoft Azure Cognitive Services**
- > **Google Cloud Vision API**

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4

Example use cases



- > **Text Detection:**
 - Detect the speed limit and show it on dashboard
 - Detect inappropriate contents
- > **Face Detection:**
 - Demographic analysis
- > **Streaming Video Events detection:**
 - Detect objects, such as pets or people in real-time

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5

Costs

AWS offers Free Tier (12 mos) for image and video analysis

- > **5,000** images for each group and **1,000** face metadata PM
- > **1,000** free minutes of video analysis per month.
- > Prices in Northern California are higher, in other regions are the same
- > If each API accepts more than 1 image, only 1 image will be charged

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6

Costs of Image Analysis

Group	API	First 1 million	Next 4 million	Next 30 million	Over 35 million
Group 1	CompareFaces IndexFaces SearchFacebyImage SearchFaces	\$0.001	\$0.0008	\$0.0006	\$0.0004
Group 2	DetectFaces DetectModerationLabels DetectLabels DetectText RecognizeCelebrities	\$0.001	\$0.0008	\$0.0006	\$0.00025

- > \$0.00001/face metadata per month
- > Eg. 2 million images with DetectLabels (Group 2):
First million: $\$0.001 \times 1 \text{ million} = \$1,000$; Second million: $\$0.0008 \times 1 \text{ million} = \800
In total, $\$1,000 + \$800 = \$1,800$

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7

Costs of Video Analysis

- > For streaming videos, Label Detection (**\$0.00817/min**) and Face Search (**\$0.12/min**) in N. Virginia, Ohio, and Oregon
- > For stored videos, **\$0.10/min** (in N. Virginia, Ohio, and Oregon) for all functionalities
- > Eg. 20,000 minutes video with Face Search:
Stored: $20,000 \text{ min} \times \$0.10/\text{min} = \$2,000$
Streaming: $20,000 \text{ min} \times \$0.12/\text{min} = \$2,400$

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8

Feature Summary

- > **Detect labels**: Given an image, it will return the name of label (recognition result), confidence score, and parent labels.
- > **Detect text**: Given an image, it will return the text, its type (line or word), confidence score, and parents.
- > Also other features: face detection, comparison, and video analysis

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9

Usability

- > The latest Java SDK version is 2.18.28 (V2).
- > The current document on the page is still using V1, and the code in the Github does not work without some Maven modifications.
- > The V2 document is not well established yet and hence it requires developers to dive into Maven/Java document.
- > The complete V2 api reference could be found here:
<https://sdk.amazonaws.com/java/api/latest/>

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10

Demo

- > A simple GUI demo to detect text



11

Demo using Java (DetectLabel)

- > <https://github.com/wang0630/aws-reko-example>



12

Pros and Cons

Pros?

- > **No prior knowledge of machine learning is required**
- > **Easy to use**
- > **Good accuracy**
- > **Various functionalities**

Cons?

- > **Not cheap**
- > **Privacy issues**

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13

Takeaways

Rekognition:

- > **SAAF, various image and video analysis**
- > **No prior knowledge about ML, easy to use**
- > **Don't forget to add permission when utilization**
- > **Lower cost in N. Virginia, Ohio, and Oregon**



14