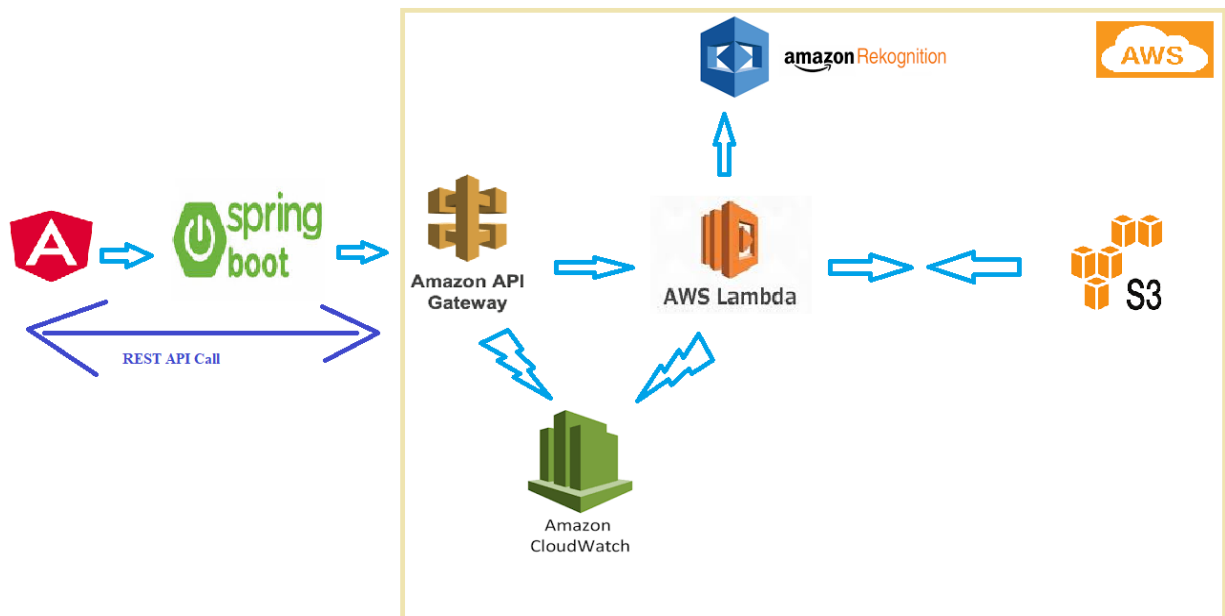


Image Comparison using AWS Rekognition

Objective: Compare each image in a s3 bucket to every other image in the bucket using AWS Rekognition and provide the matching results

Technical Approach



- Languages used: Angular for frontend and Java for backend.
- REST API call is made from Angular front end on [B] click.
- Spring Boot Cloud is used to connect to Lambda via AWS API Gateway. Spring Cloud has the Lambda handler.
`AWSAPILambdaHandler extends
SpringBootRequestHandler<APIGatewayProxyRequestEvent,
APIGatewayProxyResponseEvent>`
- Override apply method
`@Override
public APIGatewayProxyResponseEvent apply(APIGatewayProxyRequestEvent input)`
- Lambda is responsible for establishing s3 client and interacting with S3 to load all images HashMap array list. Each image is stored in ByteBuffer.
- Lambda establishes AWS Rekognition build object and passes two images from HashMap array list at a time for comparison.

- Receive compared result back from compareImages function and store the results in List array.
- Once all the images are compared with one another, the result is set to `APIGatewayProxyResponseEvent` response body.
- Results from backend is displayed on the Angular front end UI.

Source code location:

<https://github.com/kiraniitd/Angular-Spring-AWS-APIG-Lambda-S3-Image-Comparision-Rekognition>

front-end (Angular)

back-end (Spring Boot Cloud, AWS APIG, Lambda, S3)

To run front end

- npm install
- ng serve –open

To run back end

- mvn clean install
- upload the jar file to lambda function
- Create AWS API Gateway > create resource > Assign lambda function > Deploy API to stages

To run the app

- <http://localhost:4200>
- Click on 'Get Request' [B] on the UI

← → ↻ localhost:4200/main

AWS S3: Image Comparision Results

GET

Image Comparision Data: GET Request

Get Request

Results:

AWS S3: Image Comparison Results

GET

Image Comparison Data: GET Request

Get Request

Results:

```
{
  "statusCode": 200,
  "body": {
    "Image Comparison Data":
      Comparing Image: S223-01-t10_01.png and S223-03-t10_01.png Similarity : 99.99944 Confidence: 99.99922 Position: Height
      -0.4576213 Left: -0.35741296 Top: -0.15168151 Width: -0.4194685
      Comparing Image: S223-01-t10_01.png and S309-04-t10_01.png
      Comparing Image: S223-01-t10_01.png and S309-05-t10_01.png
      Comparing Image: S223-01-t10_01.png and S324-01-t10_01.png
      Comparing Image: S223-01-t10_01.png and S324-02-t10_01.png
      Comparing Image: S223-03-t10_01.png and S309-04-t10_01.png
      Comparing Image: S223-03-t10_01.png and S309-05-t10_01.png
      Comparing Image: S223-03-t10_01.png and S324-01-t10_01.png
      Comparing Image: S223-03-t10_01.png and S324-02-t10_01.png
      Comparing Image: S309-04-t10_01.png and S309-05-t10_01.png Similarity : 99.99971 Confidence: 99.99991 Position: Height
      -0.5926487 Left: -0.22215001 Top: -0.18736486 Width: -0.4633558
      Comparing Image: S309-04-t10_01.png and S324-01-t10_01.png
      Comparing Image: S309-04-t10_01.png and S324-02-t10_01.png
      Comparing Image: S309-05-t10_01.png and S324-01-t10_01.png
      Comparing Image: S309-05-t10_01.png and S324-02-t10_01.png
      Comparing Image: S324-01-t10_01.png and S324-02-t10_01.png Similarity : 99.99996 Confidence: 99.99124 Position: Height
      -0.5784229 Left: -0.20056586 Top: -0.29049268 Width: -0.5767661]}
}
```

Referred materials

- <https://angular.io/>
- <https://spring.io/>
- <https://docs.aws.amazon.com/sdk-for-java/index.html>
- <https://aws.amazon.com/api-gateway/>
- <https://aws.amazon.com/lambda/>
- <https://aws.amazon.com/s3/>
- <https://aws.amazon.com/rekognition/>

Hours Spent

| Tasks | Angular | Spring Boot | AWS APIG | Lambda | S3 | AWS Rekognition | Total Hours |
|---|----------|-------------|----------|----------|----------|-----------------|-------------|
| Research | 2 | 2 | 2 | 1 | 1 | 3 | 11 |
| Development | 3 | 3 | 3 | 4 | 2 | 4 | 19 |
| Testing | 1 | 1 | 1 | 1 | 1 | 2 | 7 |
| Integration, Deployment and Documentation | 1 | | | | 1 | 1 | 3 |
| Total Hours by Area | 7 | 6 | 6 | 6 | 5 | 10 | 40 |