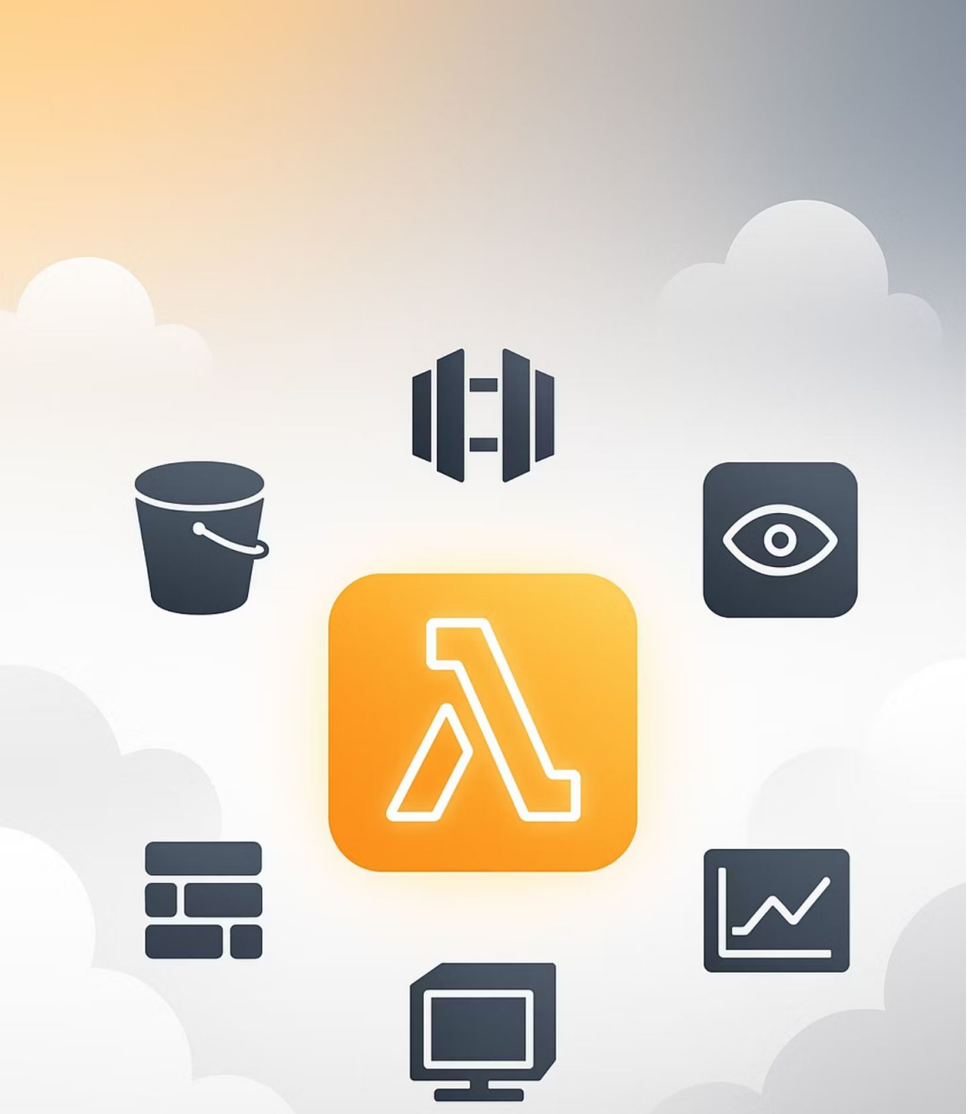


How to Build a Serverless Content Moderation System with AWS

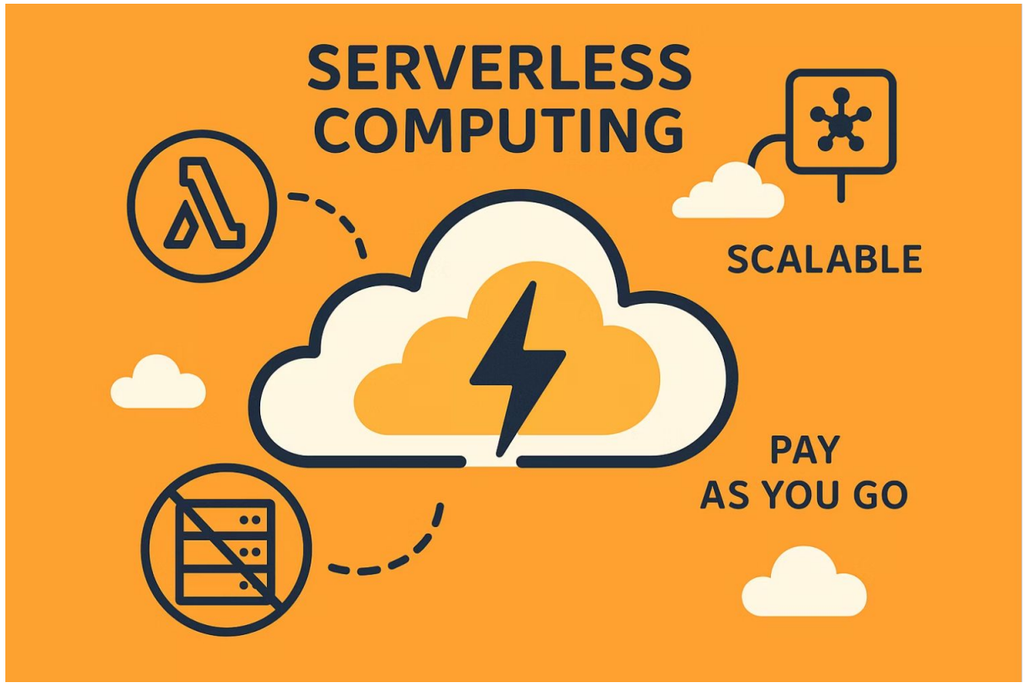
by Madhura Jayashanka

Why Content Moderation Matters

Why content needs filtering,

- Prevents inappropriate media affecting UX
- Protects brand reputation
- Safeguards business operations
- Automation essential for scale (If moderating manually)

Why Serverless Architecture?



No Server Management

Focus on code, not infrastructure

Event-Driven

Functions respond to triggers

Pay-Per-Use

Cost scales with actual usage

Fast Deployment

Quicker time-to-market

AWS Services Powering Our Solution

AWS Lambda

Code without servers

Amazon S3

Image storage + event triggers

Amazon SQS

Smooth traffic controller

API Gateway

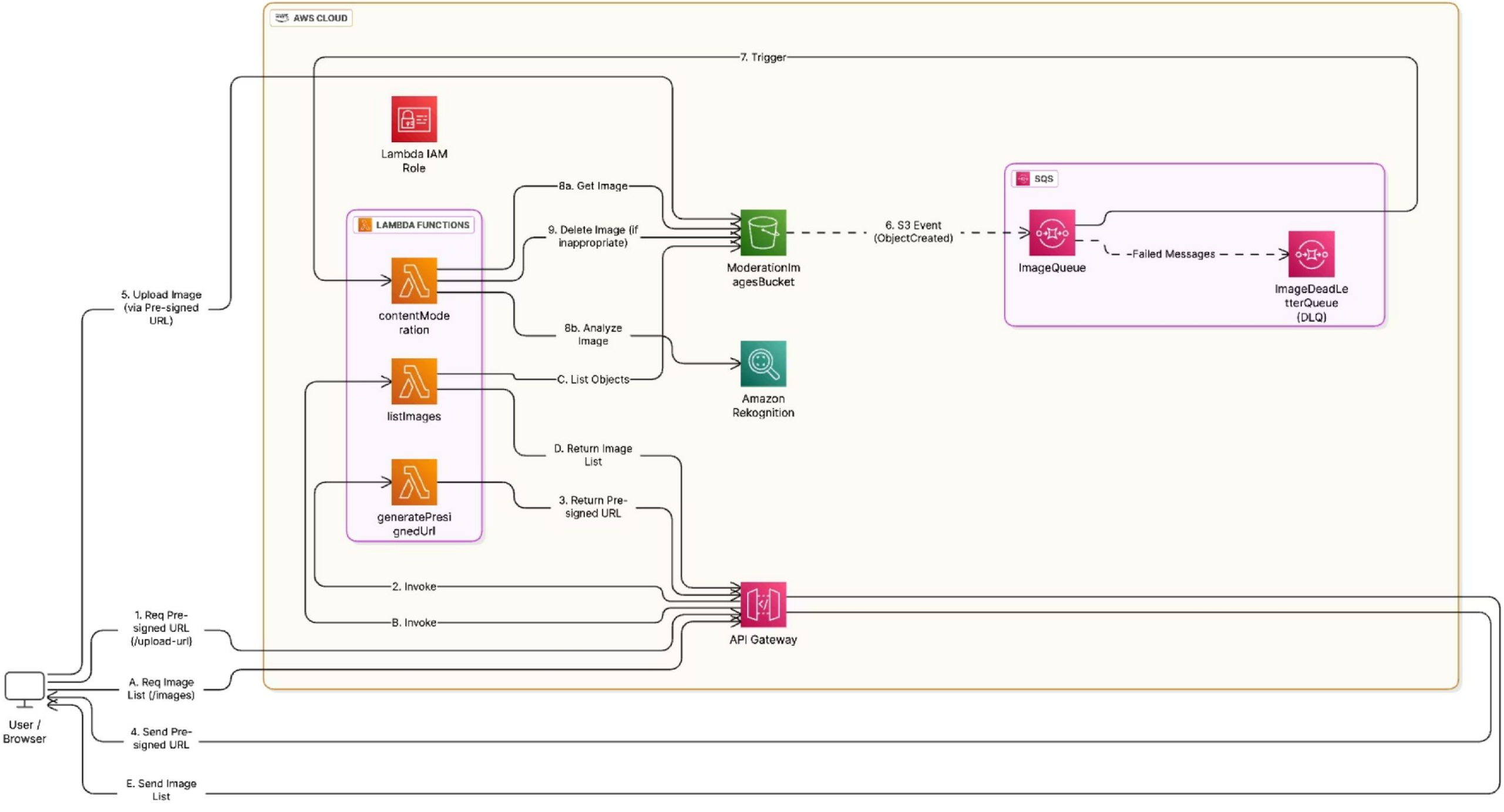
Entry point to your backend

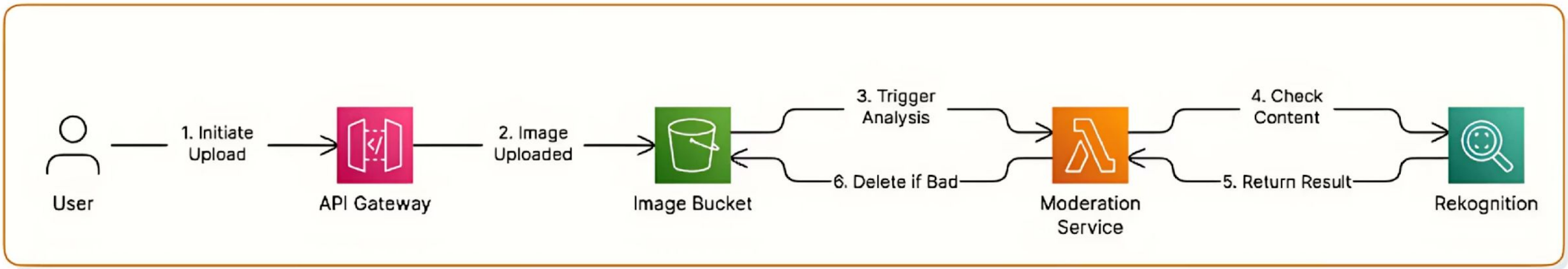
Rekognition

AI-powered image analysis

CloudWatch

AWS health dashboard


AWS CLOUD
7. Trigger
Lambda IAM Role
LAMBDA FUNCTIONS
8a. Get Image
9. Delete Image (if inappropriate)
contentModeration
8b. Analyze Image
C. List Objects
listImages
D. Return Image List
generatePresignedUrl
3. Return Pre-signed URL
2. Invoke
B. Invoke
ModerationImagesBucket
6. S3 Event (ObjectCreated)
SQS
ImageQueue
Failed Messages
ImageDeadLetterQueue (DLQ)
Amazon Rekognition
API Gateway
5. Upload Image (via Pre-signed URL)
1. Req Pre-signed URL (/upload-url)
A. Req Image List (/images)
4. Send Pre-signed URL
E. Send Image List
User / Browser


User
1. Initiate Upload
API Gateway
2. Image Uploaded
Image Bucket
3. Trigger Analysis
6. Delete if Bad
Moderation Service
4. Check Content
5. Return Result
Rekognition

Hands-on Demo

What We'll See:

- Image upload workflow
- Moderation in action
- Real-time filtering
- CloudWatch logs

Key Components:

- Serverless.yml configuration
- Lambda function code
- S3 bucket policy
- Rekognition parameters

Best Practices & Enhancements

1. **Security First**
   - S3 pre-signed URLs
   - Least privilege IAM roles
2. **Reliability**
   - Dead Letter Queues
   - CloudWatch monitoring
3. **Scaling Choices**
   - SQS: moderate workloads
   - Kinesis: high-volume streaming
4. **Enhancements**
   - Manual review queue
   - Global CDN with CloudFront

Pros and Cons

Advantages

Highly scalable

Cost-effective pay-per-use

Fully managed services

Rapid development

Challenges

Cold start latency - initial startup delay.

AWS service limits

AWS Lambda – 15 minutes max execution time

- Step Functions (chained Lambdas)
- ECS Fargate or AWS Batch

Amazon Rekognition – 15 MB max image size

- Resize before feeding to Rekognition
- Amazon SageMaker for custom models

Thank You!

Resources

GitHub: https://github.com/madhurajayashanka/content-moderation-rekognition

Article:

https://medium.com/@madhurajayashanka/how-to-build-an-image-content-moderation-system-with-aws-40b352f6d2c0