How to build a Serverless ML Bot on AWS

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What's this?
الإمارات
Emirates
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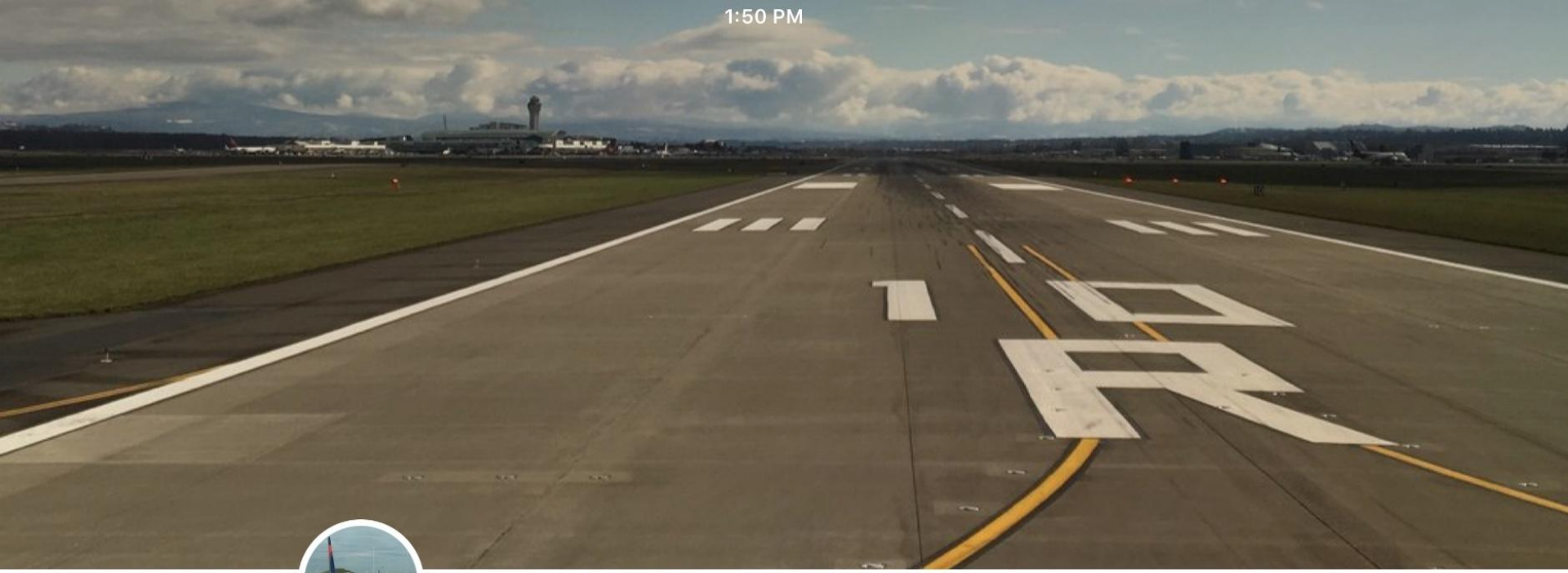
1:50 PM



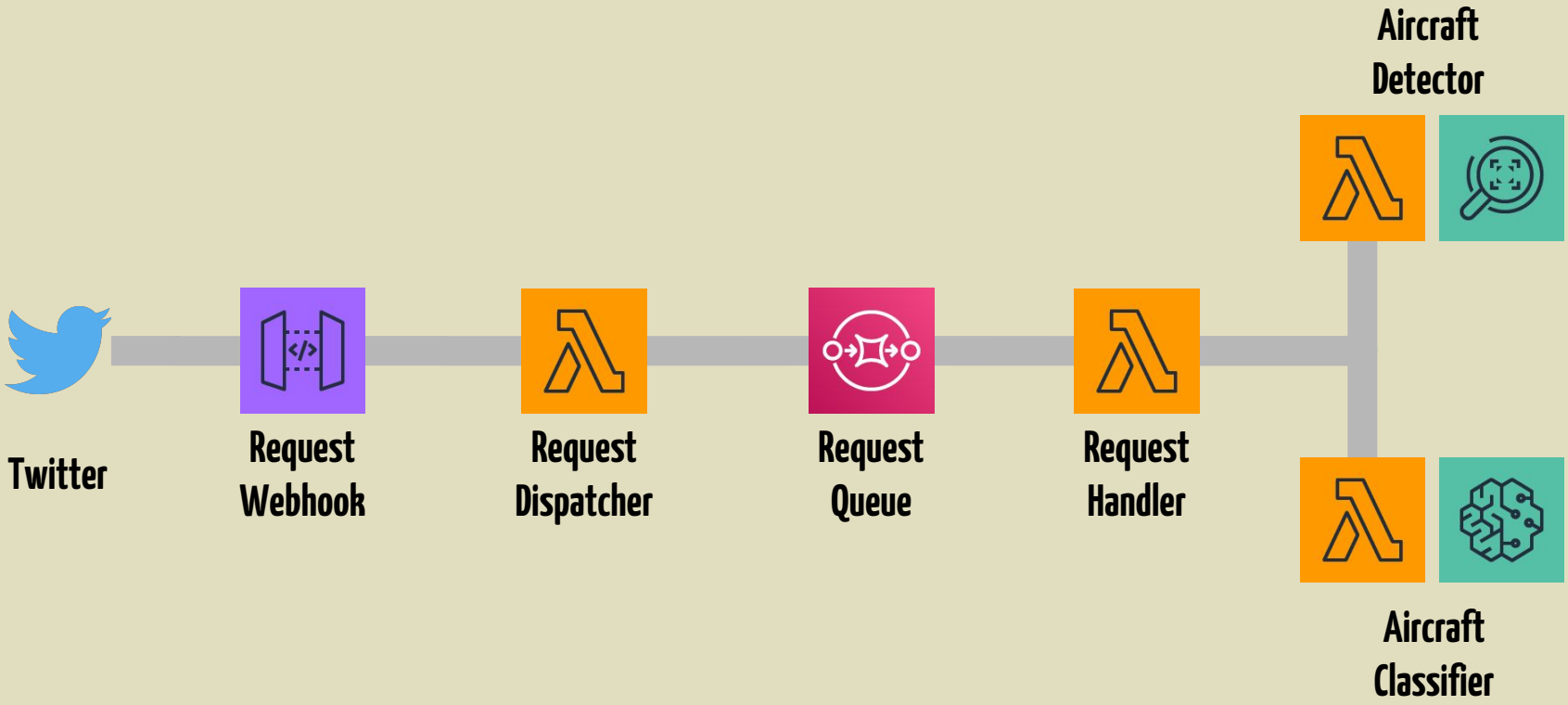
Edit profile

AircraftML

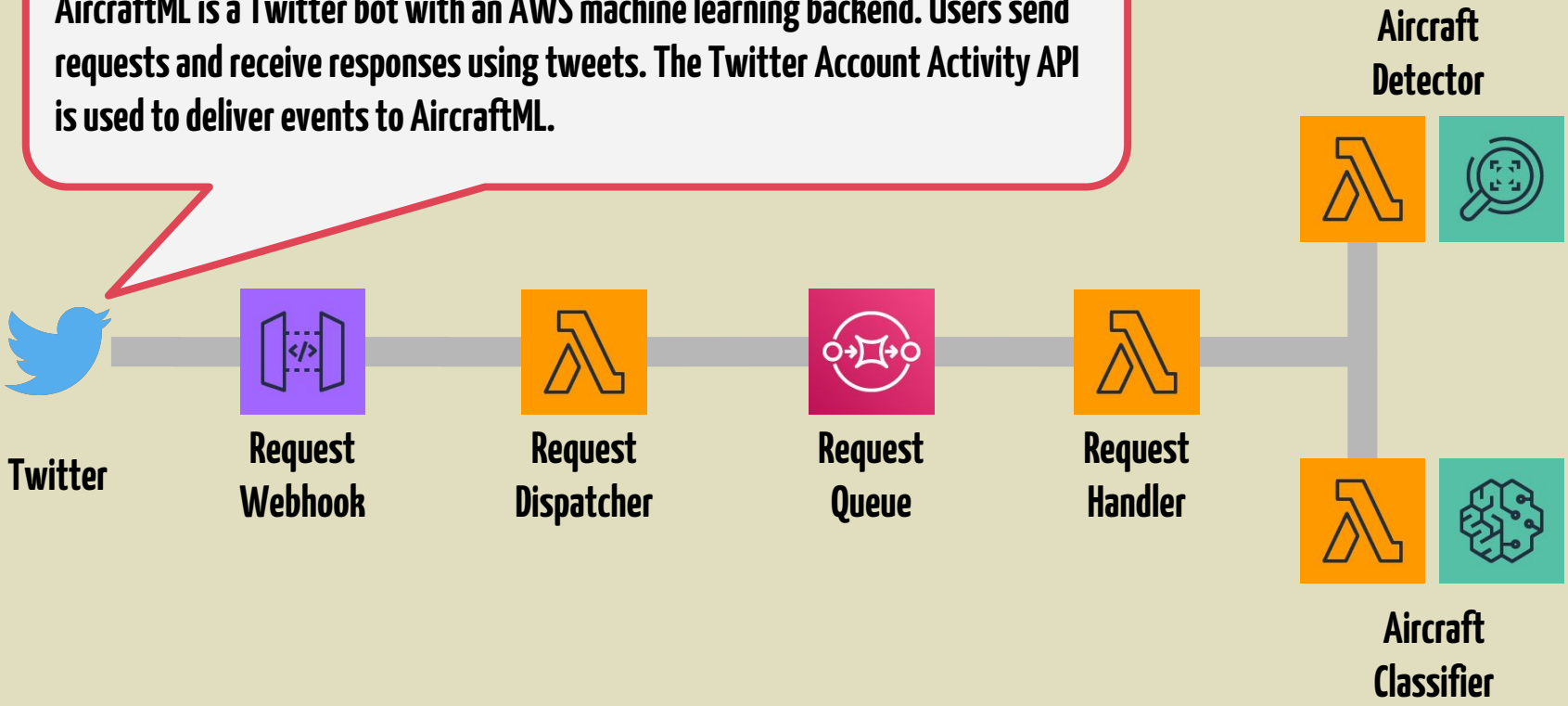
@AircraftML

Send an aircraft pic & I'll guess what it is. Built w/Sagemaker, Rekognition, SQS, Lambda & Fargate. By @awsgeek

Near PDX awsgeek.com Joined April 2018


Aircraft
Detector
Twitter
Request
Webhook
Request
Dispatcher
Request
Queue
Request
Handler
Aircraft
Classifier

AircraftML is a Twitter bot with an AWS machine learning backend. Users send requests and receive responses using tweets. The Twitter Account Activity API is used to deliver events to AircraftML.



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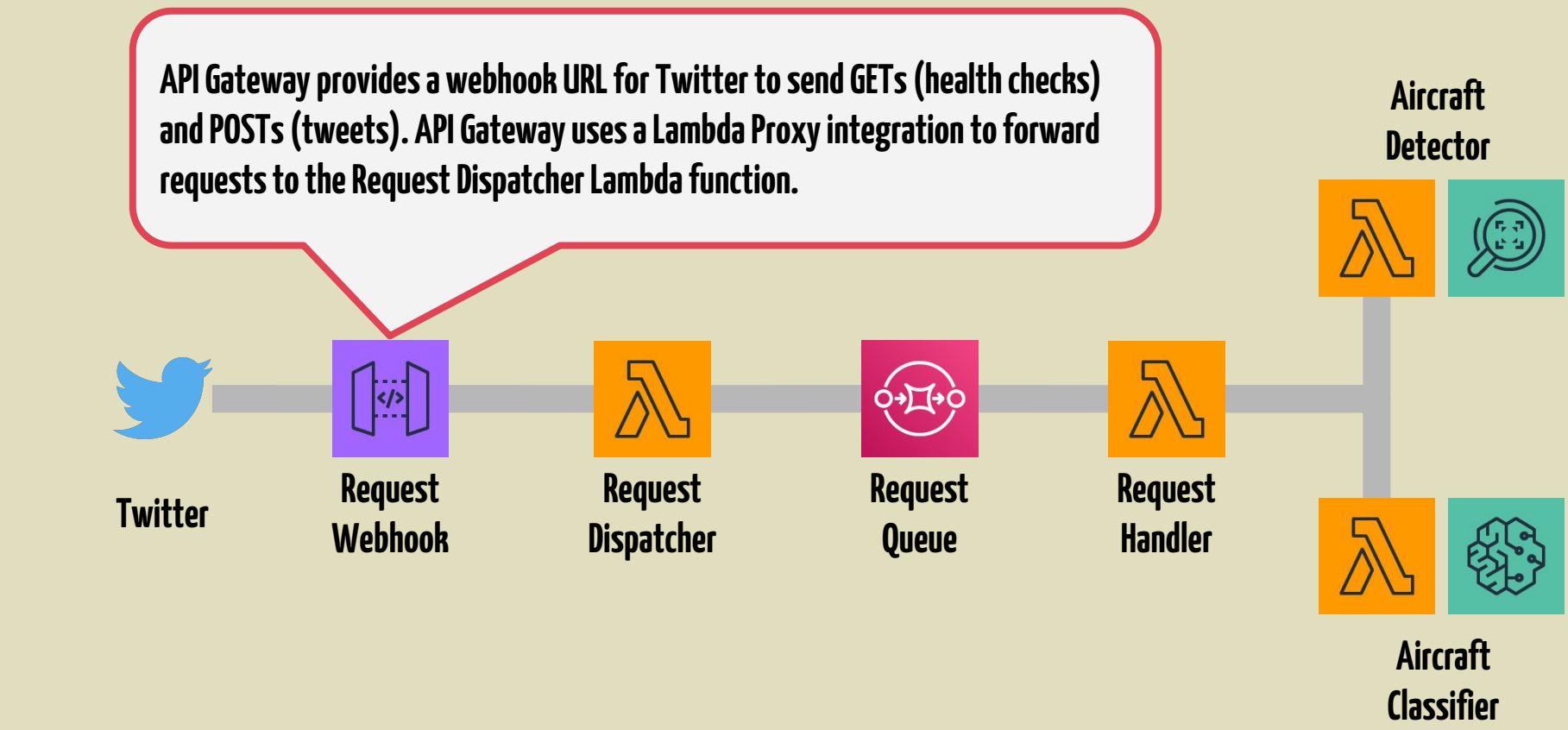
API Gateway provides a webhook URL for Twitter to send GETs (health checks) and POSTs (tweets). API Gateway uses a Lambda Proxy integration to forward requests to the Request Dispatcher Lambda function.
Aircraft Detector
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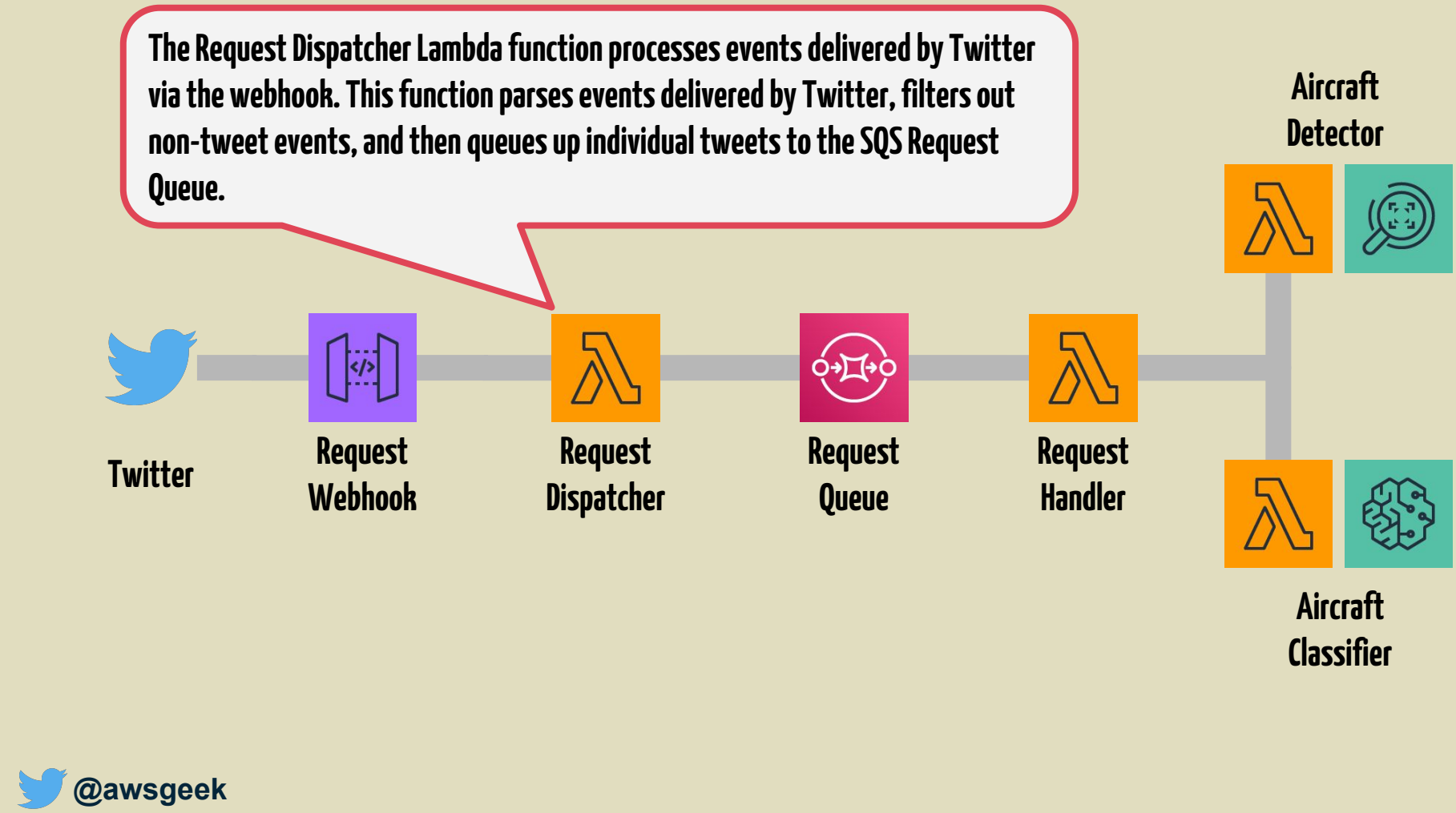
The Request Dispatcher Lambda function processes events delivered by Twitter via the webhook. This function parses events delivered by Twitter, filters out non-tweet events, and then queues up individual tweets to the SQS Request Queue.
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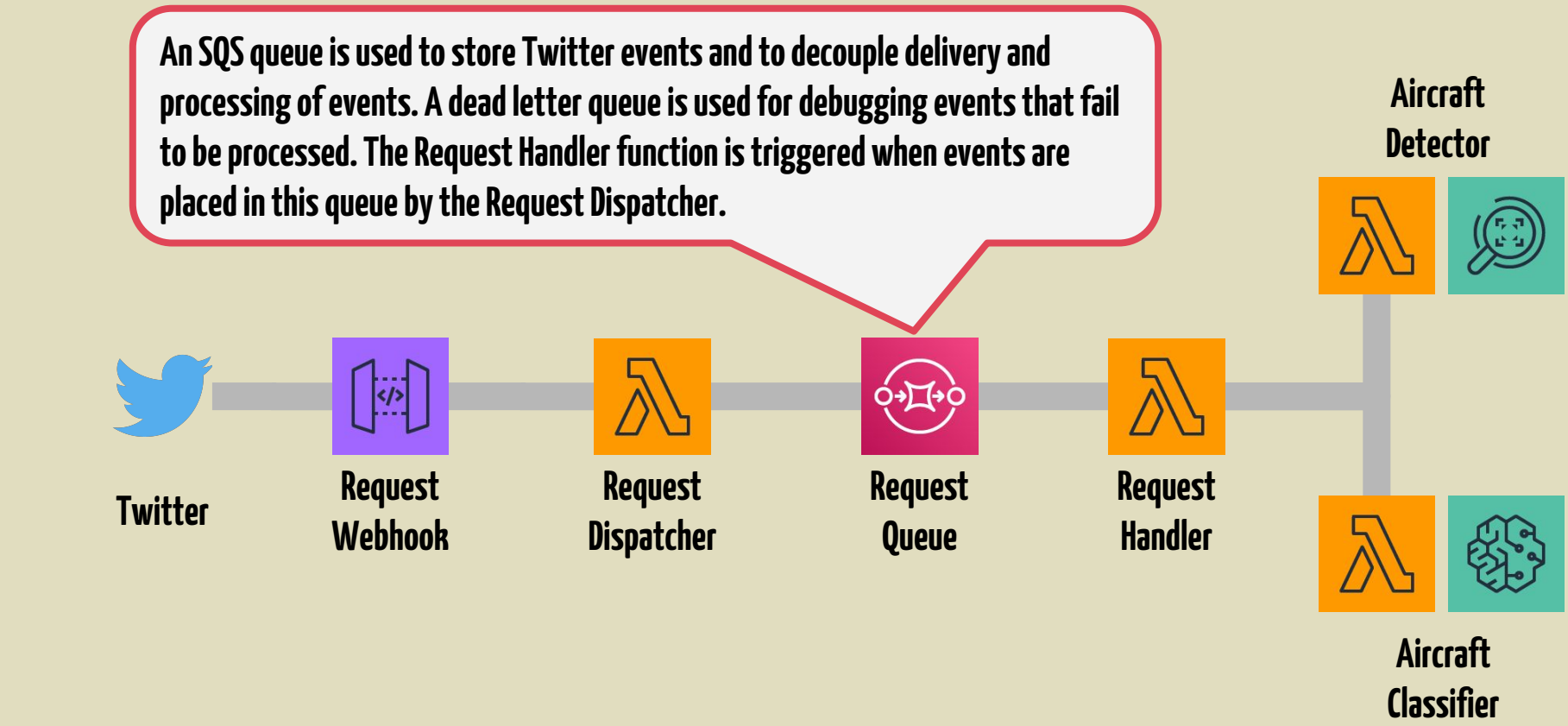
An SQS queue is used to store Twitter events and to decouple delivery and processing of events. A dead letter queue is used for debugging events that fail to be processed. The Request Handler function is triggered when events are placed in this queue by the Request Dispatcher.
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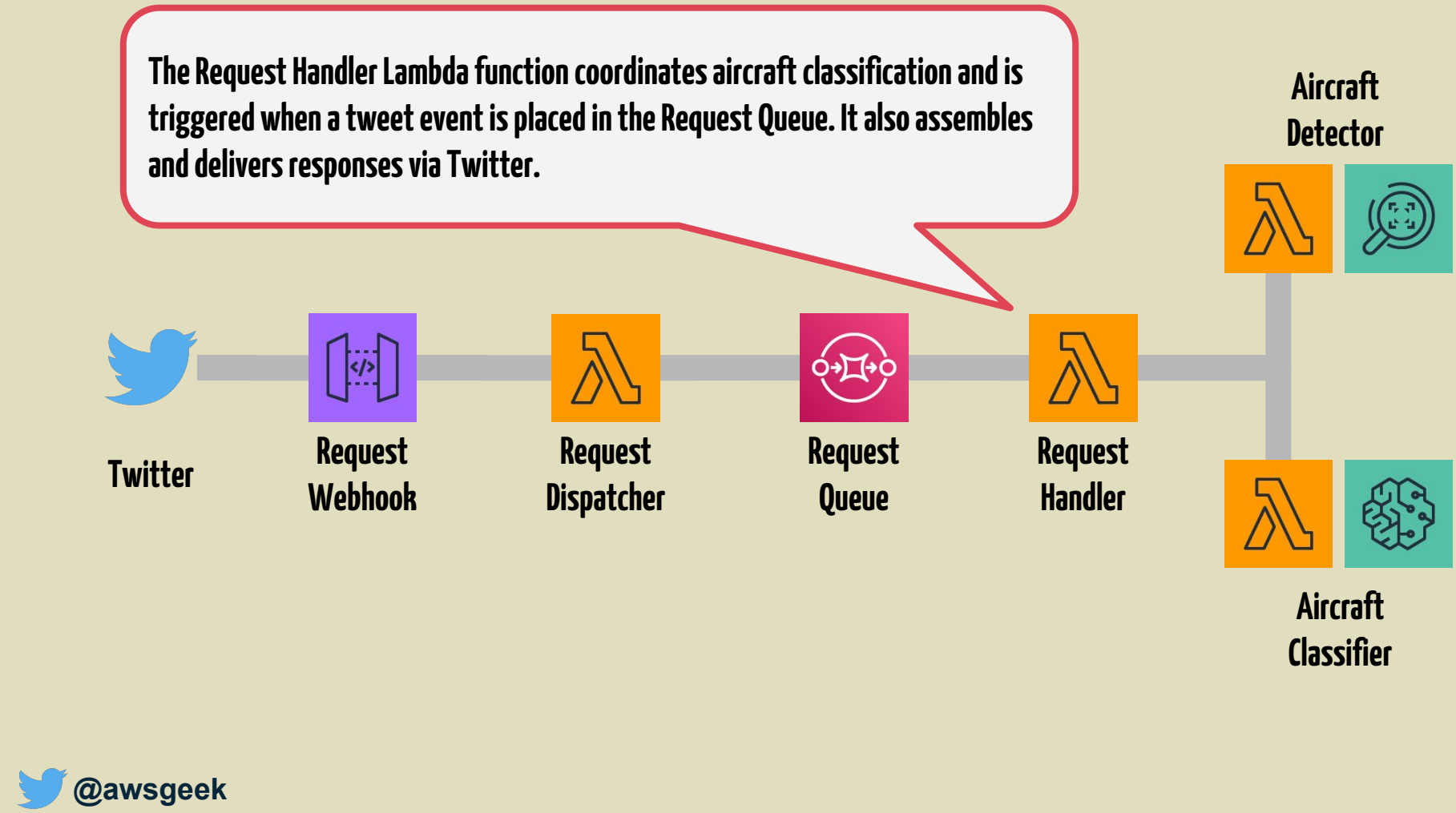
The Request Handler Lambda function coordinates aircraft classification and is triggered when a tweet event is placed in the Request Queue. It also assembles and delivers responses via Twitter.
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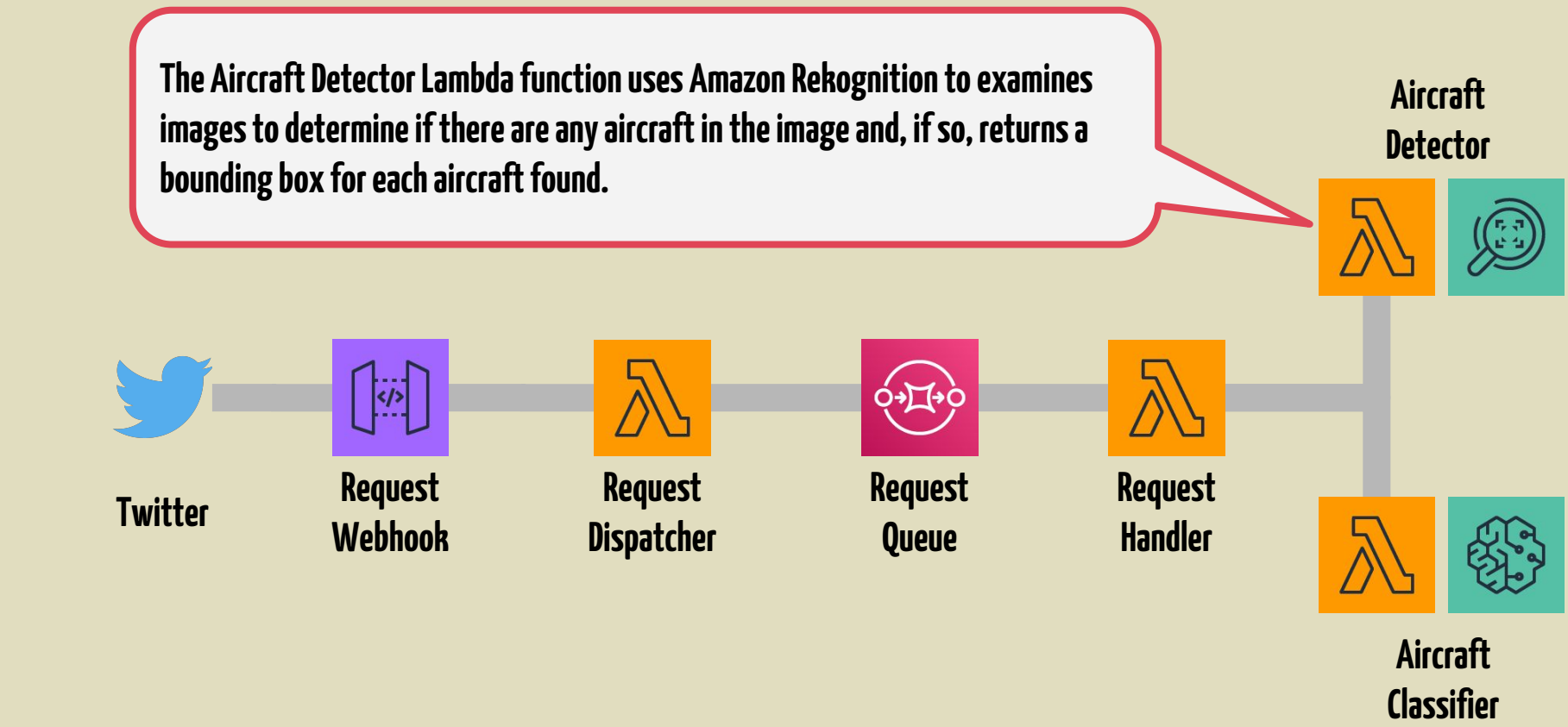
The Aircraft Detector Lambda function uses Amazon Rekognition to examines images to determine if there are any aircraft in the image and, if so, returns a bounding box for each aircraft found.
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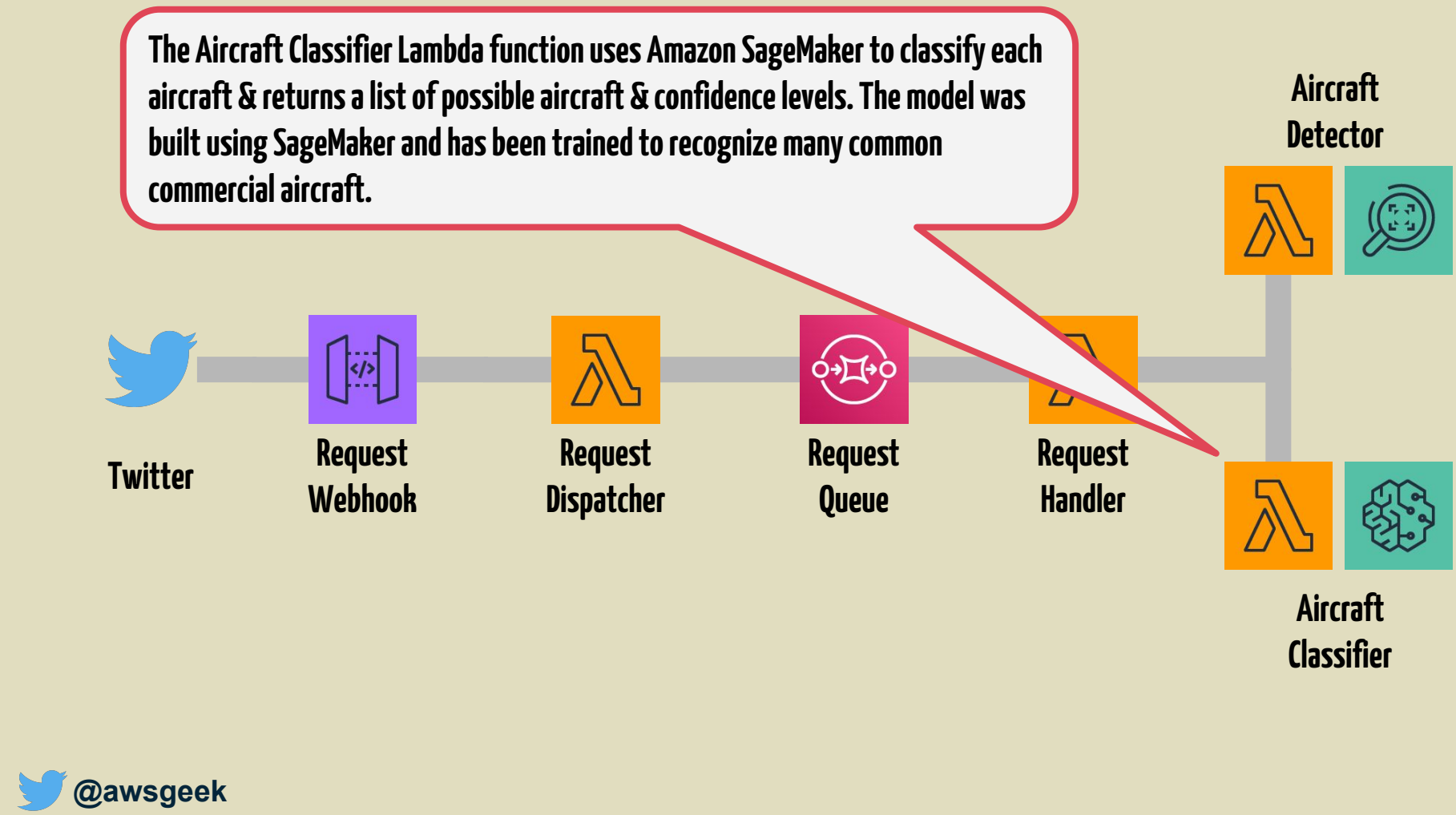
The Aircraft Classifier Lambda function uses Amazon SageMaker to classify each aircraft & returns a list of possible aircraft & confidence levels. The model was built using SageMaker and has been trained to recognize many common commercial aircraft.
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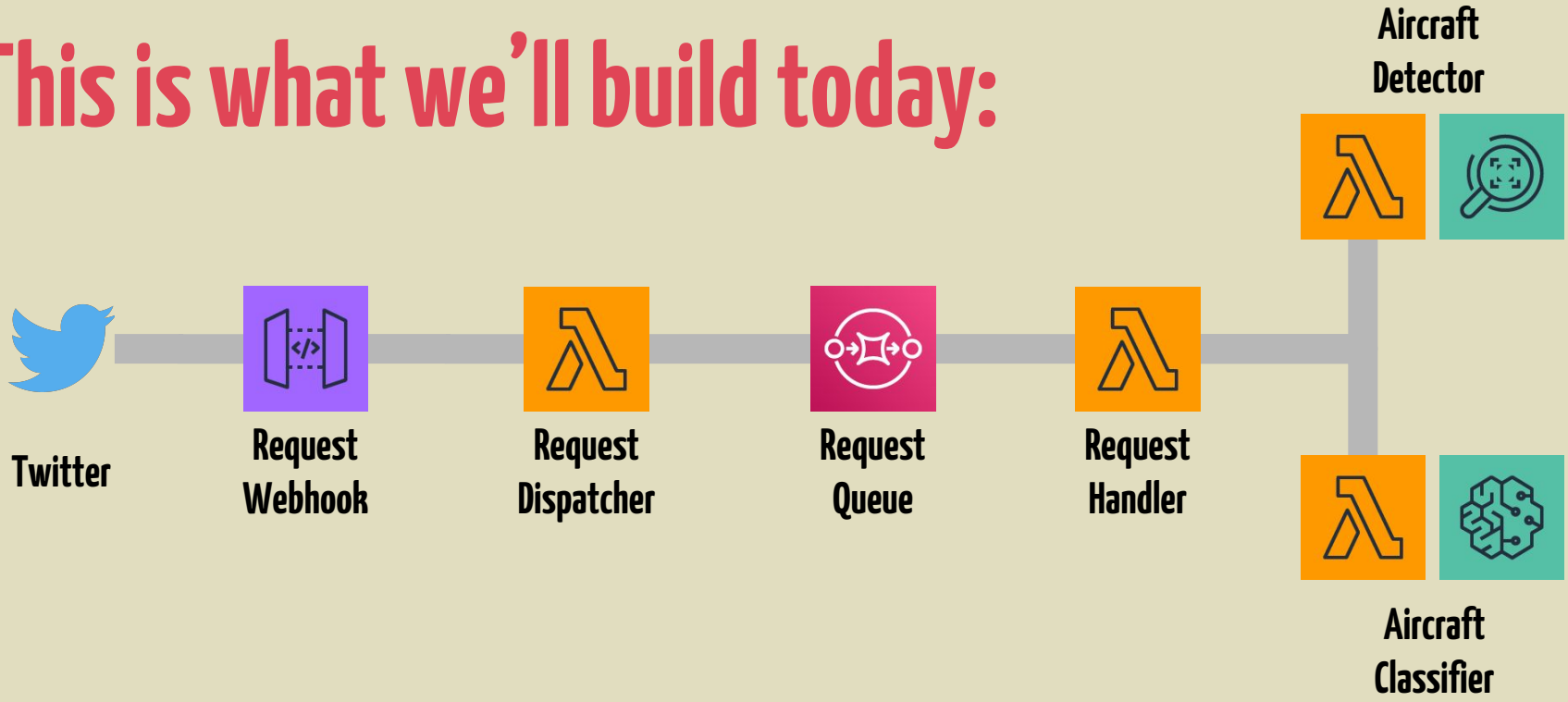
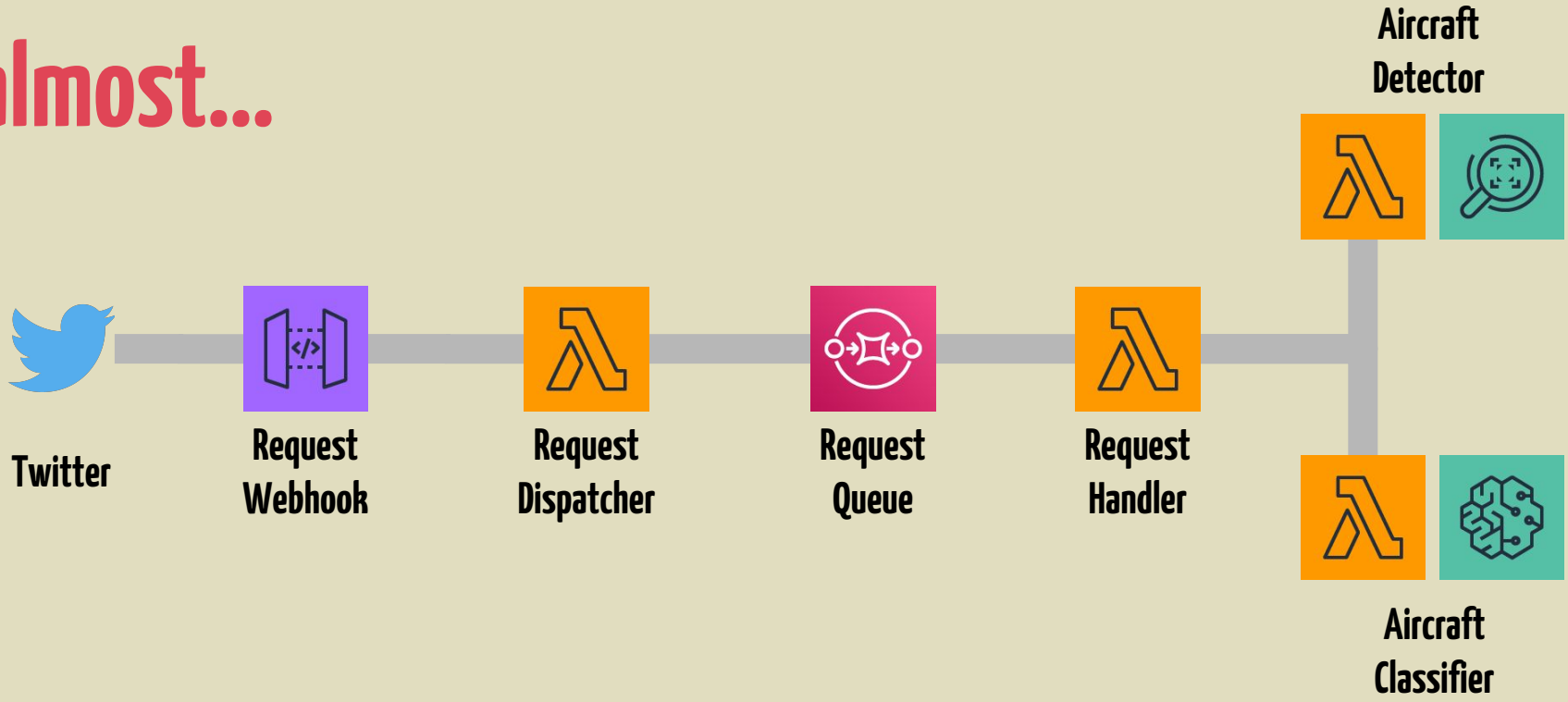
This is what we'll build today:



almost...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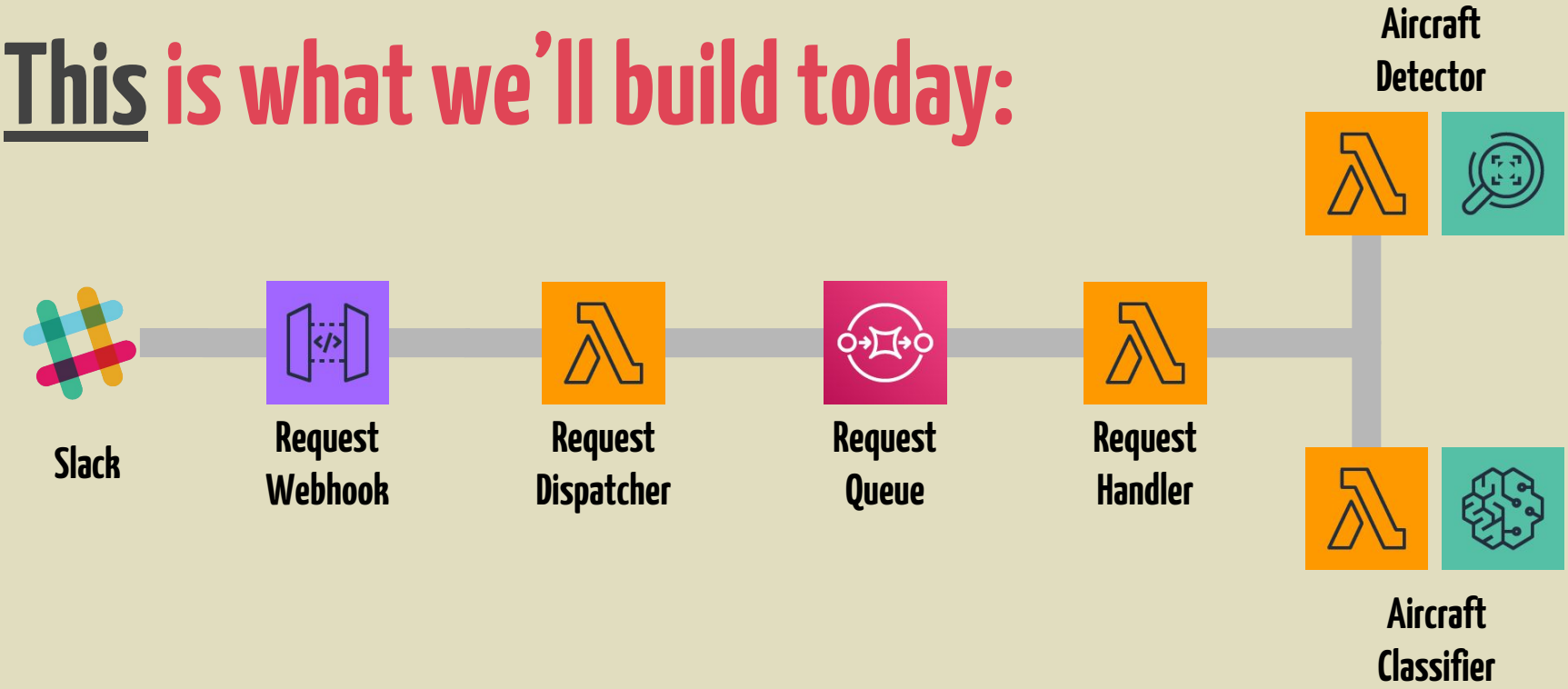
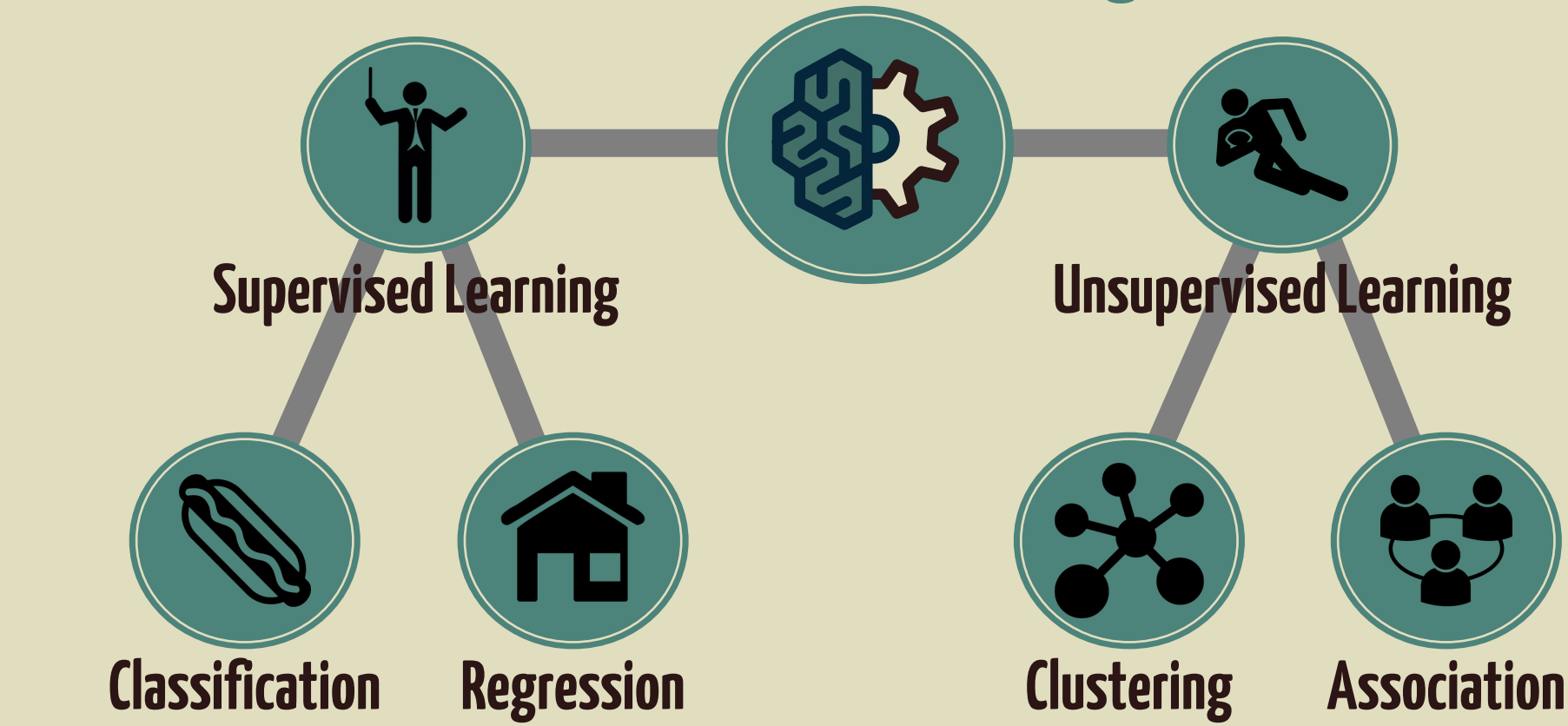


questions?

Machine Learning



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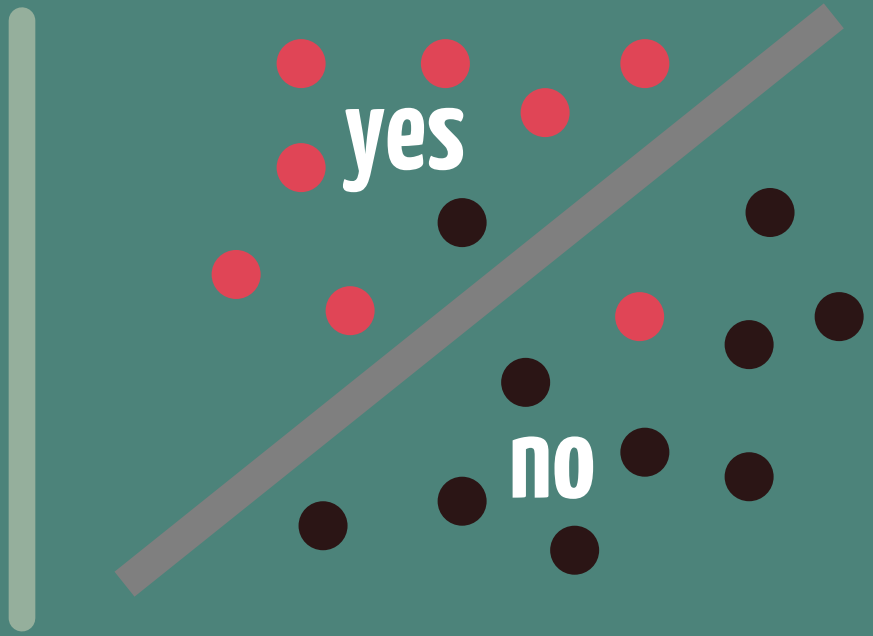
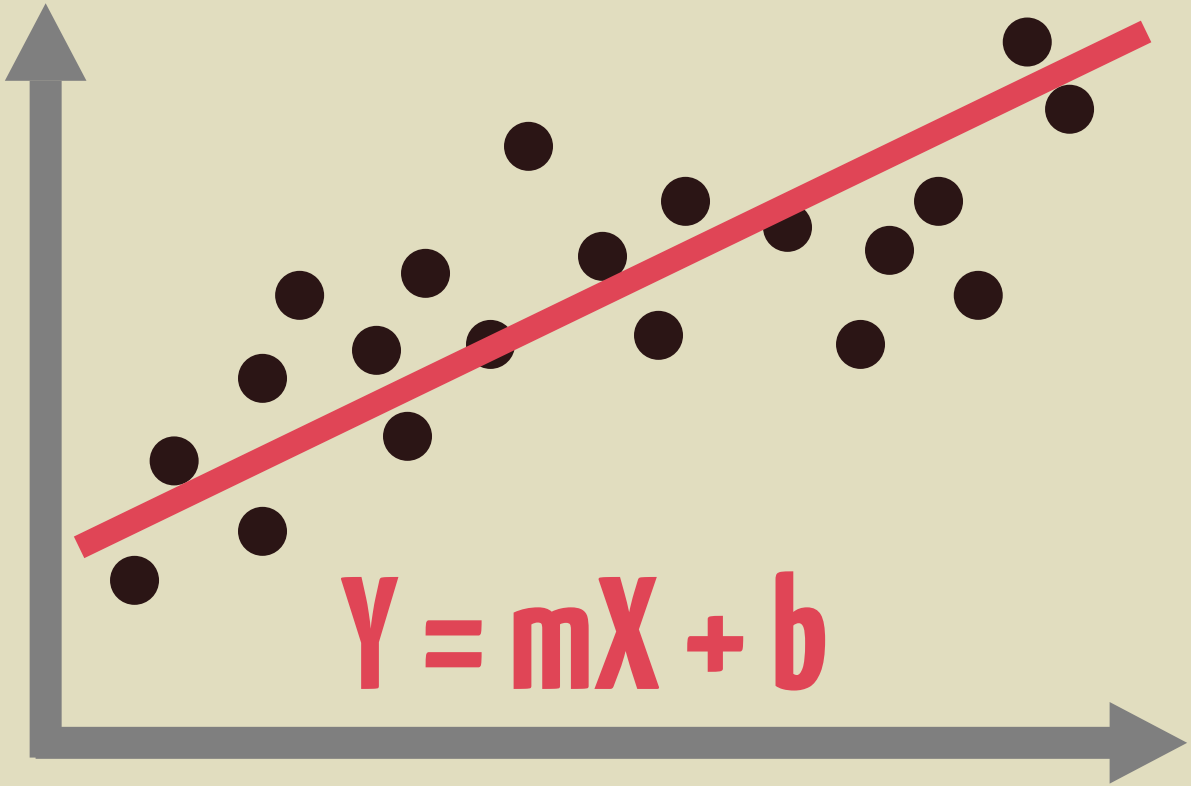
Classification

Is it a hotdog?



Regression



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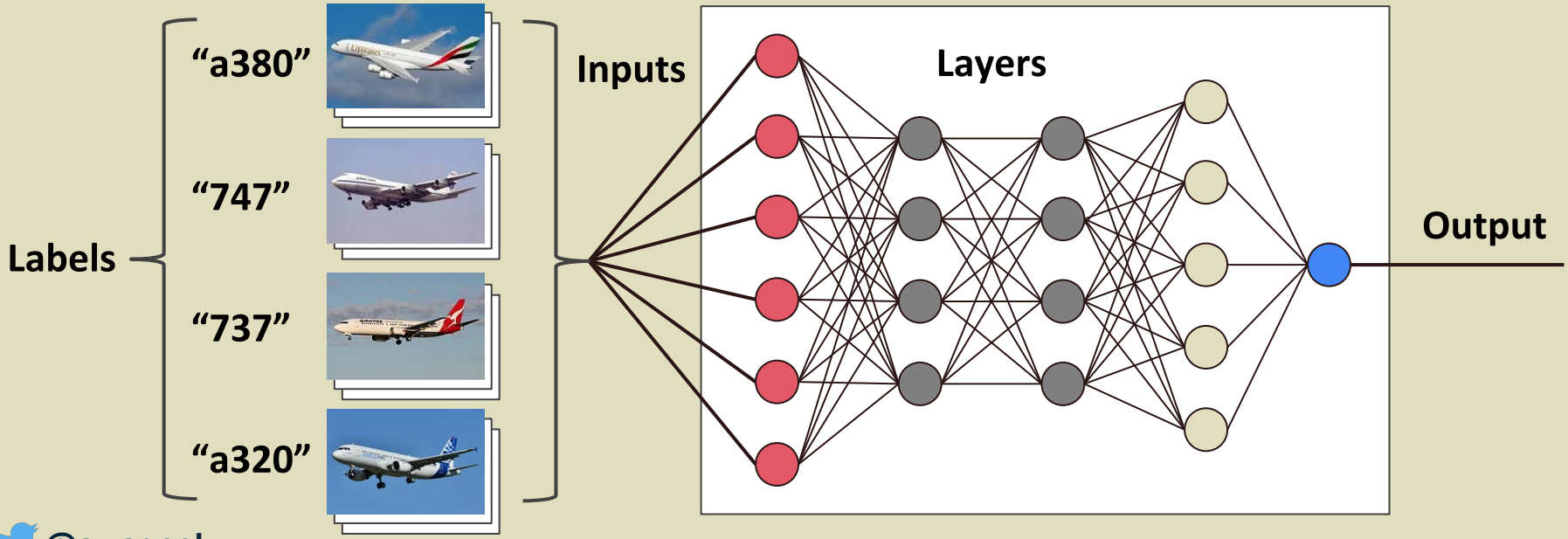
Classification



Amazon SageMaker

Build, train, and deploy ML models at scale

- Ad targeting
- IoT & machine learning
- Credit default prediction
- Content quality prediction

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AWS Lambda

Serverless computing
Pay only while code runs

- Bring your own code
- Bring your own language
- Exec triggers like S3, API Gateway, DynamoDB, etc

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Amazon Rekognition

Deep learning-based image and video analysis

- Object, scene, activity detection
- Facial recognition
- Content classification
- Text detection

Amazon SQS
(Simple Queue Service)

Fully managed message queues for microservices, distributed systems, and serverless applications

- Unlimited throughput
- At-least-once delivery
- Best effort ordering
- Optional strict FIFO, exactly-once delivery

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