



# AI for Developers

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# Amazon.com, 1995

## « Two Decades of Recommender Systems at Amazon.com » (2017)



G.D. Linden, J.A. Jacobi, and E.A. Benson,  
Collaborative Recommendations Using  
Item-to-Item Similarity Mappings, US  
Patent 6,266,649, to Amazon.com, Patent  
and Trademark Office, 2001 (filed **1998**).

<https://www.computer.org/csdl/mags/ic/2017/03/mic2017030012.html>

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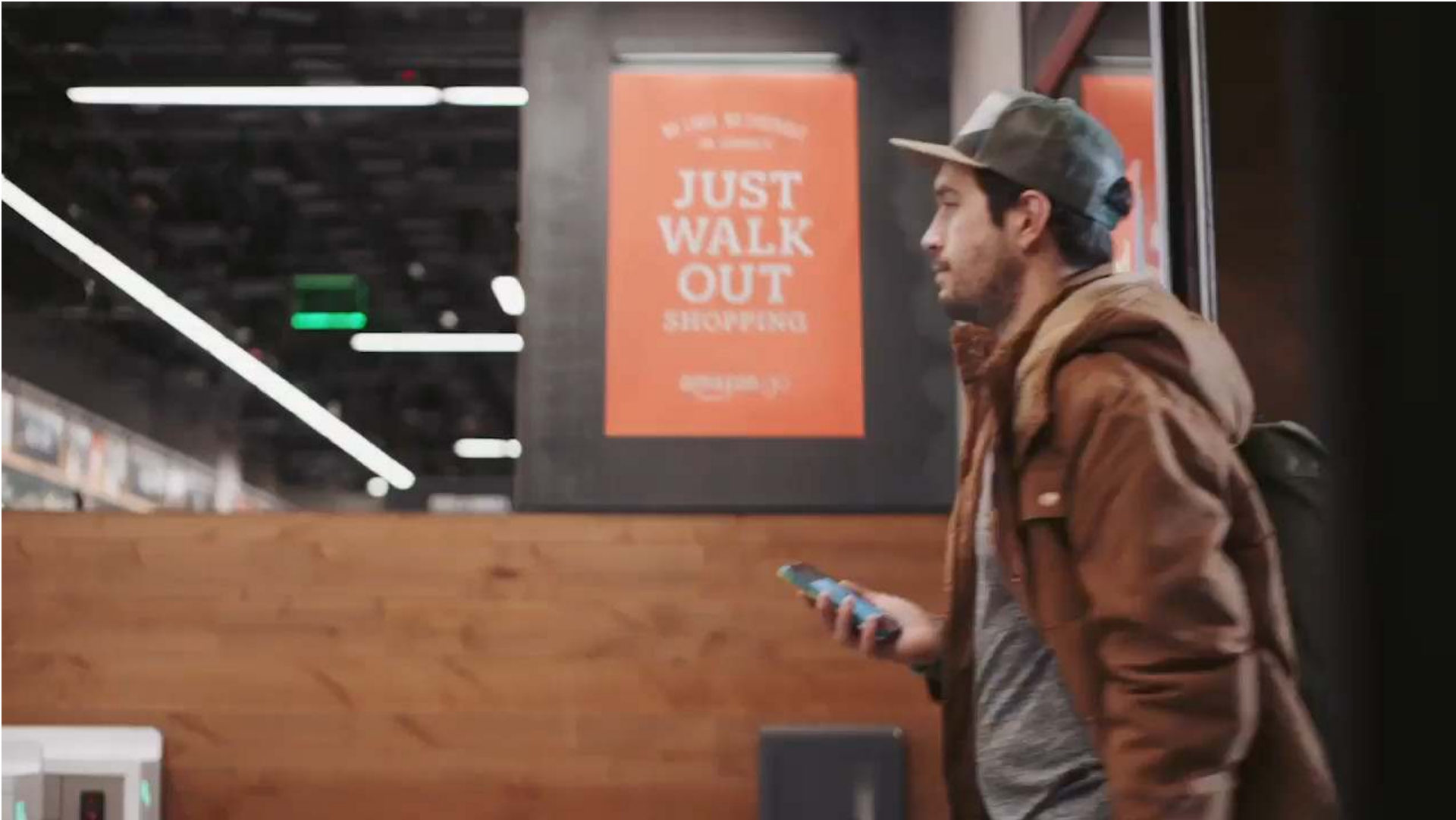
amazonrobotics



# amazon echo







NO CASHIERS.  
NO CHECKOUTS.  
NO BAGGERS.

**JUST  
WALK  
OUT**

SHOPPING

amazon go

# Our mission

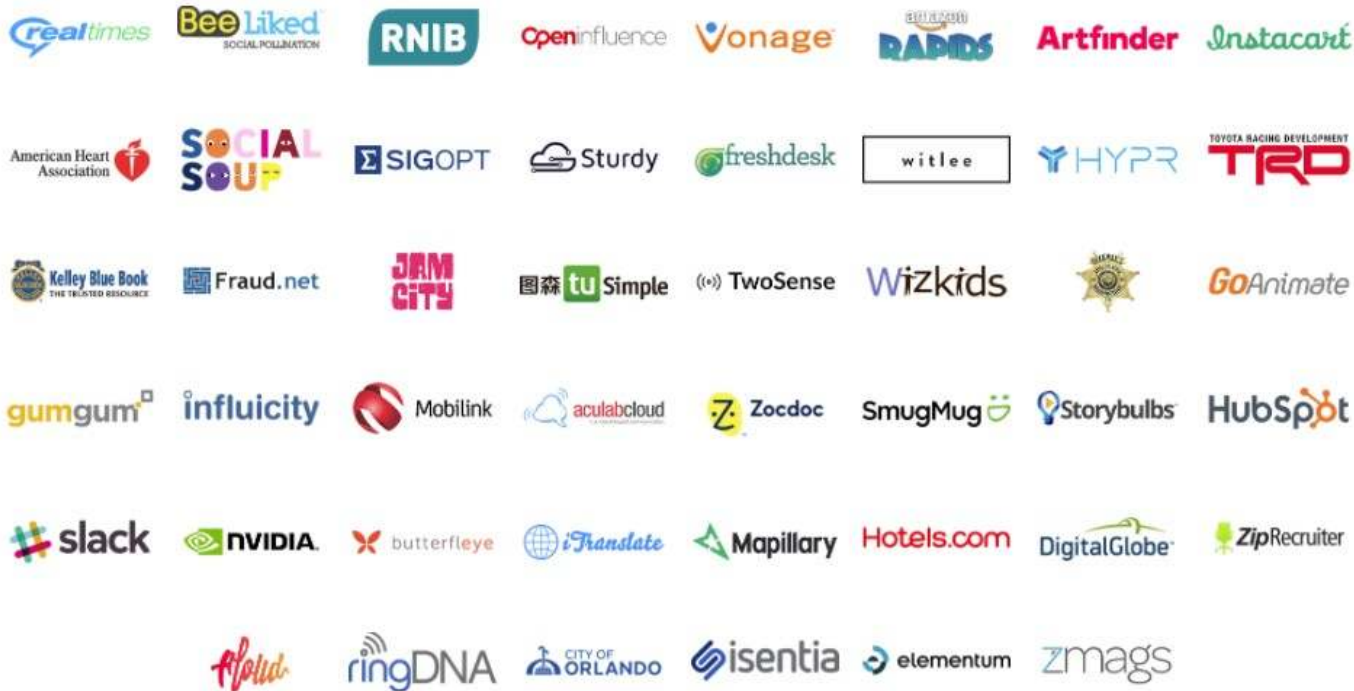
**Put Machine Learning in the hands of every  
developer**



# More ML is built on AWS than anywhere else



# More ML is built on AWS than anywhere else



# The AWS ML Stack

## **Application Services**

API-driven services: Vision, Language & Speech Services, Chatbots

## **Platform Services**

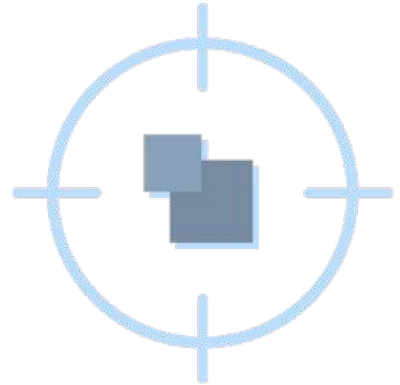
Deploy machine learning models with high-performance machine learning algorithms, broad framework support, and one-click training, tuning, and inference.

## **Frameworks & Infrastructure**

Develop sophisticated models with any framework, create managed, auto-scaling clusters of GPUs for large scale training, or run prediction on trained models.

# Amazon Rekognition

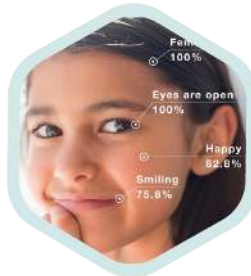
Deep Learning-based image analysis service



# Amazon Rekognition Image



## Object and Scene Detection



## Facial Analysis



# Face Recognition



# Unsafe Image Detection



## Celebrity Recognition



Text in Image



## Face Comparison



# Object & Scene Detection




City	91.4%
Downtown	91.4%
Metropolis	91.4%
Urban	91.4%
Building	56.2%
High Rise	56.2%
Dock	55.6%
Pier	55.6%
Dawn	52.4%
Dusk	52.4%

# Facial Analysis





looks like a face	99.8%
appears to be female	100%
age range	23 - 38 years old
smiling	99.4%
appears to be happy	93.2%
wearing eyeglasses	99.9%
wearing sunglasses	97.6%

# Crowd Detection – up to 100 faces




Choose a sample image



Use your own image

Image must be .jpg or .png format and no larger than 5MB. Your image isn't stored.


 **Upload**

or drag and drop

**Go**

Done with the demo?  
[Learn more](#)

▼ Results



looks like a face	99.9 %
appears to be male	99.9 %
age range	26 - 43 years old
smiling	98.5 %
appears to be happy	99.7 %
not wearing glasses	99.9 %

[Show more](#)

# Facial Search



=



Similarity

97%



≠



≠



# Image Moderation



## ▼ Results

Suggestive	83.5%
Female Swimwear Or Underwear	83.5%

### Explicit Nudity

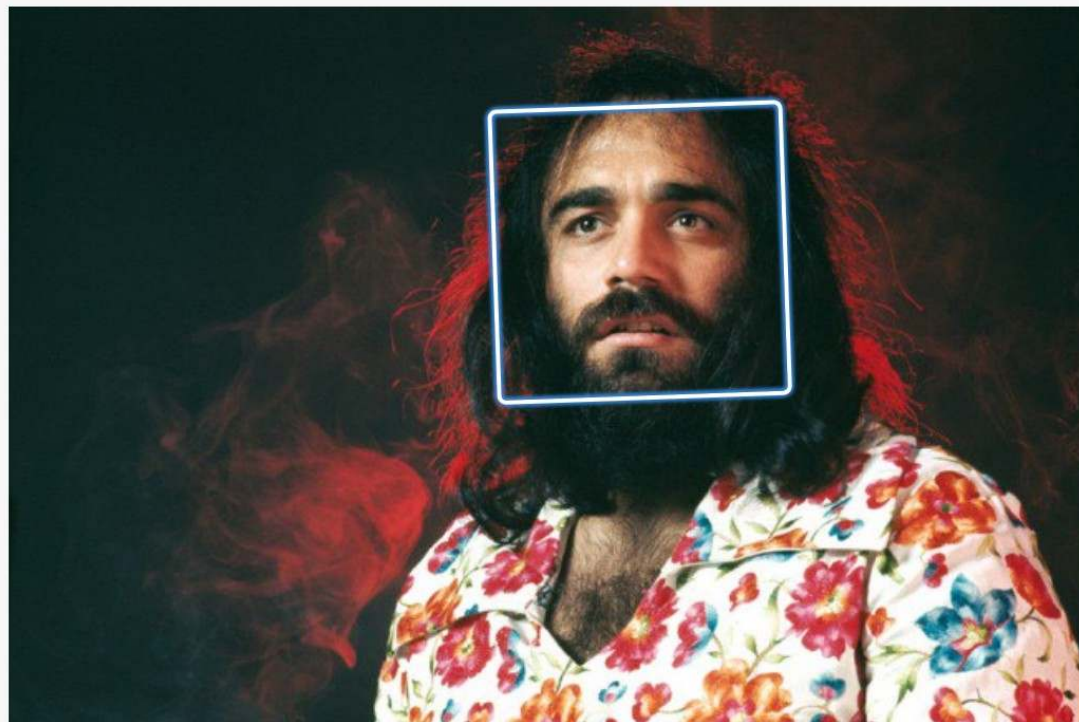
- Nudity
- Graphic Male Nudity
- Graphic Female Nudity
- Sexual Activity
- Partial Nudity

### Suggestive

- Female Swimwear or Underwear
- Male Swimwear or Underwear
- Revealing Clothes



# Celebrity Recognition



Done with the demo?

[Learn more](#)

## ▼ Results



**Demis Roussos**

[Learn More](#)

Match confidence

99 %

## ► Request

## ► Response

# Text in Image



## ▼ Results

US English only

| 5T6E652 |

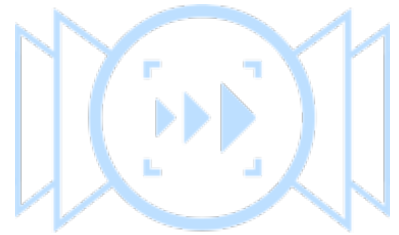
## ► Request

## ▼ Response

```
{
  "TextDetections": [
    {
      "Confidence": 96.38984680175781,
      "DetectedText": "5T6E652",
      "Geometry": {
        "BoundingBox": {
          "Height": 0.05606506019830704,
          "Left": 0.38905566930770874,
          "Top": 0.7383729219436646,
          "Width": 0.10844030976295471
        },
        "Polygon": [
          {
            "X": 0.38905566930770874,
            "Y": 0.7383729219436646
          },
          {
            "X": 0.49749597907066345,
            "Y": 0.7726403474807739
          },
          {
            "X": 0.4896218776702881,
            "Y": 0.8287054300308228
          },
          {
            "X": 0.38905566930770874,
            "Y": 0.7383729219436646
          }
        ]
      }
    }
  ]
}
```

# Amazon Rekognition Video

Deep Learning-based video analysis service



# Amazon Rekognition Video

Analyze activity, recognize, and track people in stored and live video



Object and activity  
detection



Person tracking



Real-time  
live stream



Celebrity  
recognition



Unsafe video  
detection



Face recognition




Facial  
Analysis

sky news









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Home UK World Politics US Ocean Rescue Science & Tech Business Entertainment Offbeat Weather


## THE ROYAL WEDDING



ARRIVALS

-  **Elton John**  
Singer
-  **David Furnish**  
Elton John's husband
-  **David Beckham**  
Former footballer
-  **Victoria Beckham**  
Businesswoman
-  **Princess Beatrice**  
Royal Family
-  **Princess Eugenie**  
Royal Family
-  **Prince Seeiso Bereng**  
Royal Family of Lesotho
-  **Princess Mabereng Seeiso**  
Royal Family of Lesotho

### PROFILES



**David Beckham** Former footballer

David Robert Joseph Beckham, OBE is an English former professional footballer. He played for Manchester United, Preston North End, Real Madrid, Milan, LA Galaxy.

Now playing...

Sky News used **Amazon Rekognition** to perform **real-time identification of guests** as they entered St. George's Chapel



# Traffic Cam 352 - Riverview West

Northbound

03:15:05:41

Mon, Nov 27, 2017



**LIVE STREAMING** ●  
*Front Door Camera 1*

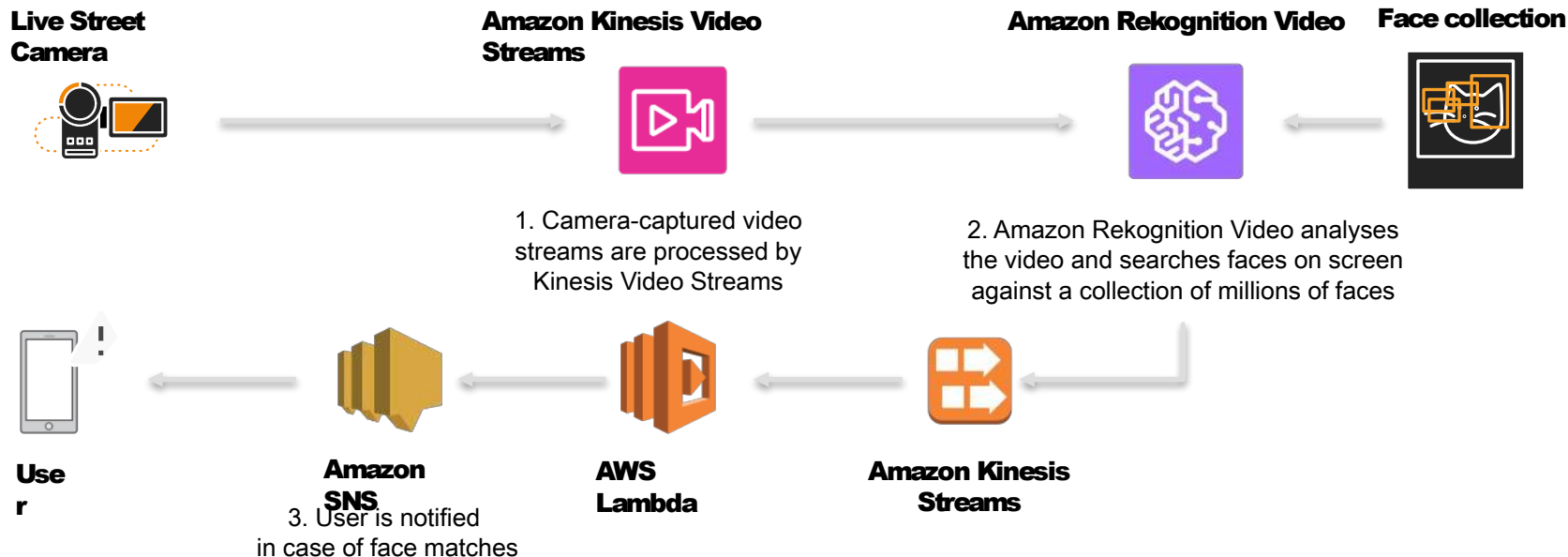


Smartphone Video

00:05:00



# Use case: real-time video identification



# DEMO

<https://aws.amazon.com/blogs/machine-learning/easily-perform-facial-analysis-on-live-feeds-by-creating-a-serverless-video-analytics-environment-with-amazon-rekognition-video-and-amazon-kinesis-video-streams>

# Amazon Polly

Deep Learning-based text-to-speech service





# Amazon Polly

Turn text into lifelike speech using Deep Learning



Wide selection of  
voices and languages



Synchronize



Fine-grained  
control



replay

# A Focus on Voice Quality

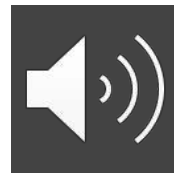
Support for Speech Synthesis Markup Language (SSML) Version 1.0

<https://www.w3.org/TR/speech-synthesis>

```
<speaking xml:lang="en-US">
```

The price of this book is **<prosody rate="60%">45€</prosody>**

```
</speaking>
```



**DEMO:**

**breathing effect**

# Amazon Translate

Neural Machine Translation Service

**Now generally available**



FREE TIER

# Amazon Translate

Natural and fluent language translation



Real-time  
translation



Batch analysis



Automatic language  
recognition



Low cost

# Languages

## Available now

English to/from:

- Spanish
- Portuguese
- German
- French
- Arabic
- Simplified Chinese

## Coming soon

- Japanese
- Russian
- Italian
- Traditional Chinese
- Turkish
- Czech



# DEMO

# Amazon Transcribe

Automatic speech recognition service

**Now generally available**



FREE TIER

# Amazon Transcribe

Automatic conversion of speech into accurate, grammatically correct text



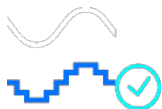
Multiple  
languages



Intelligent punctuation  
and formatting



Timestamp  
generation



Support for  
telephony audio



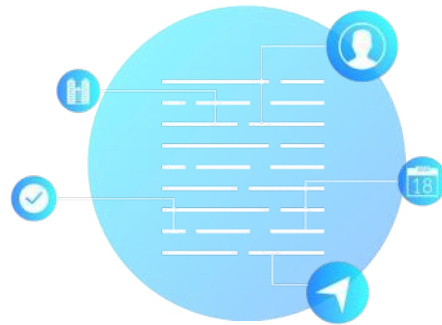
Recognize multiple  
speakers



Custom  
vocabulary

# Amazon Comprehend

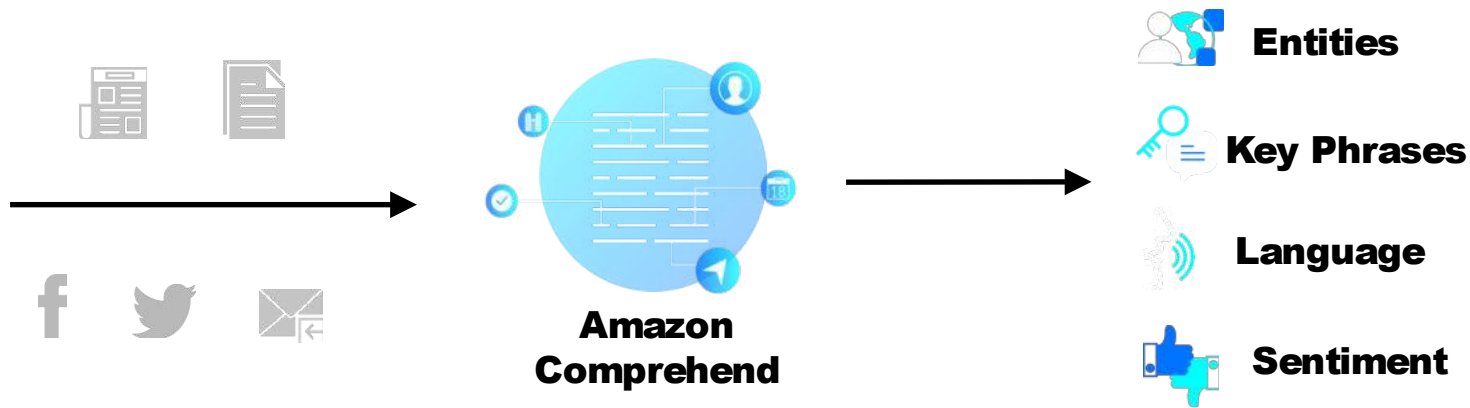
Natural Language Processing



FREE TIER

# Fully managed natural language processing

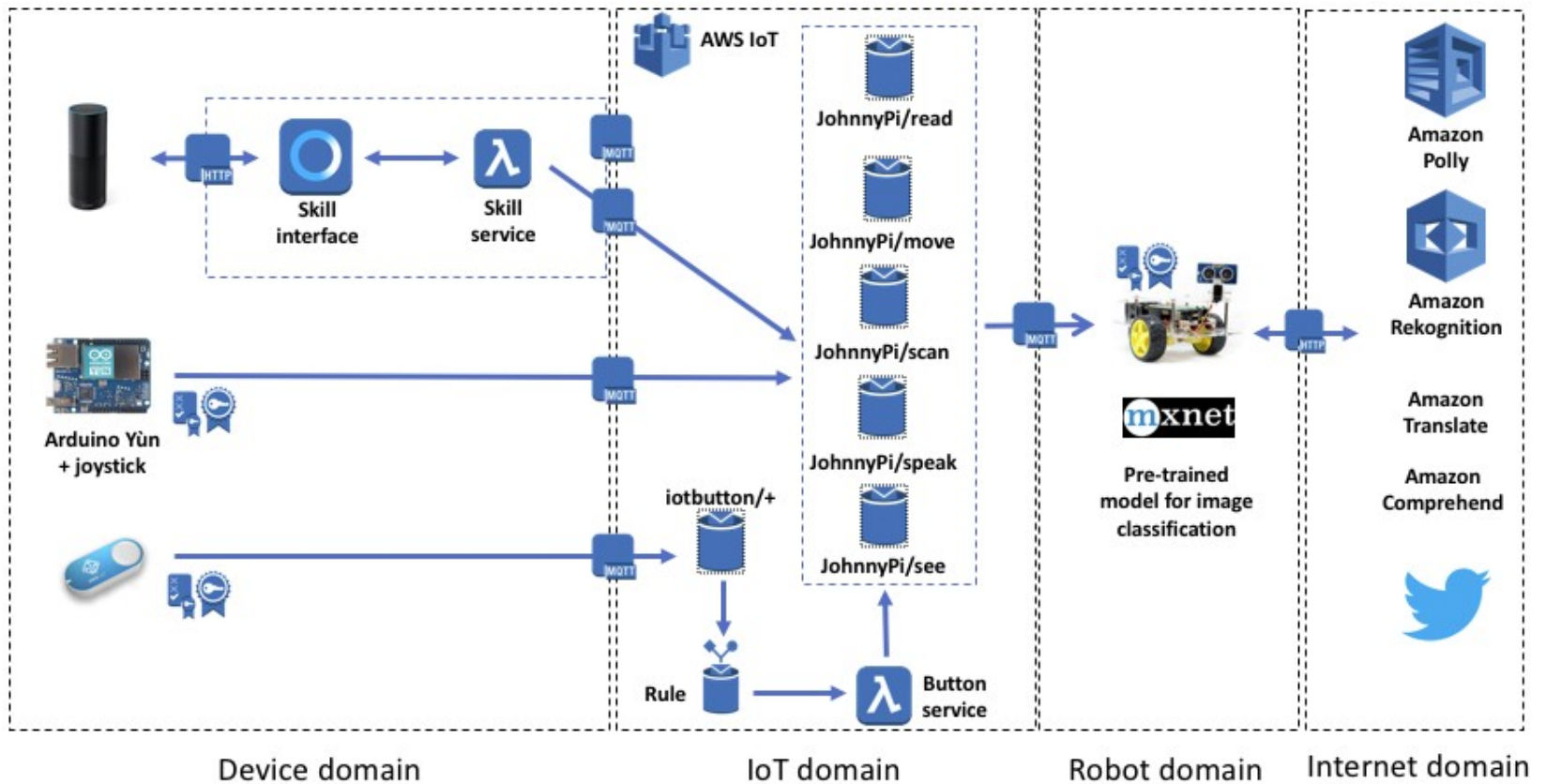
Discover valuable insights from text



# **DEMO**

**Rekognition + Polly  
+ Comprehend + Translate**





<https://medium.com/@julsimon/johnny-pi-i-am-your-father-part-8-reading-translating-and-more-c22f7b8275cc>

# Democratization of ML

## APPLICATION SERVICES



**Amazon  
Rekognition**



**Amazon  
Polly**



**Amazon  
Lex**

**Amazon  
Comprehend**



**Amazon  
Rekognition  
Video**



**Amazon  
Transcribe**



**Amazon  
Translate**

## PLATFORM SERVICES

**Amazon  
SageMaker**

**AWS DeepLens**

## FRAMEWORKS AND INTERFACES

**Deep  
Learning AMI**

Apache  
MXNet

Caffe2

CNTK

PyTorch

TensorFlow

Theano

Torch

Keras

Gluon



# Thank you!

<https://aws.amazon.com/machine-learning>  
<https://aws.amazon.com/blogs/ai>

<https://medium.com/@julsimon>  
<https://youtube.com/juliensimonfr>  
<https://gitlab.com/juliensimon/johnnypi>

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