

**AWS**

BUILDERS' DAY

# Machine Learning on AWS

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# Our mission

Put Machine Learning in the hands  
of every developer and data scientist

# Our Approach for Machine Learning



## Customer-focused

90%+ of our ML roadmap is defined by customers



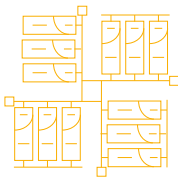
## Pace of innovation

200+ new ML launches and major feature updates in the last year



## Breadth and depth

A wide range of AI and ML services in-production



## Multi-framework

Support for the most popular frameworks



## Security and analytics

Deep set of security and encryption features, with robust analytics capabilities



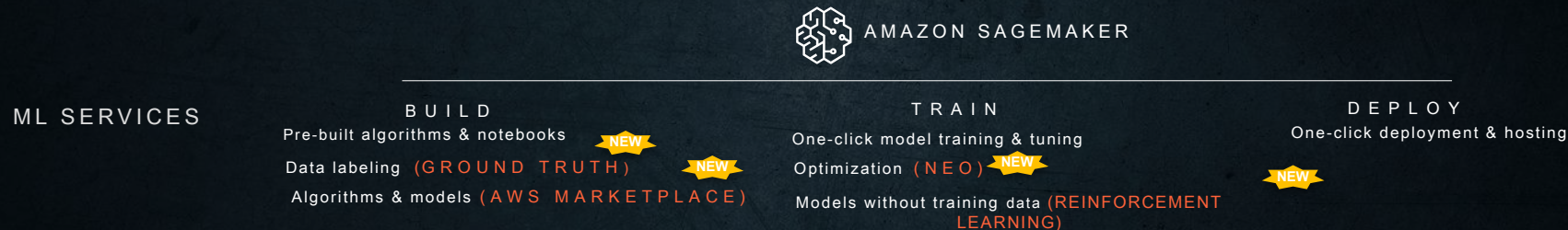
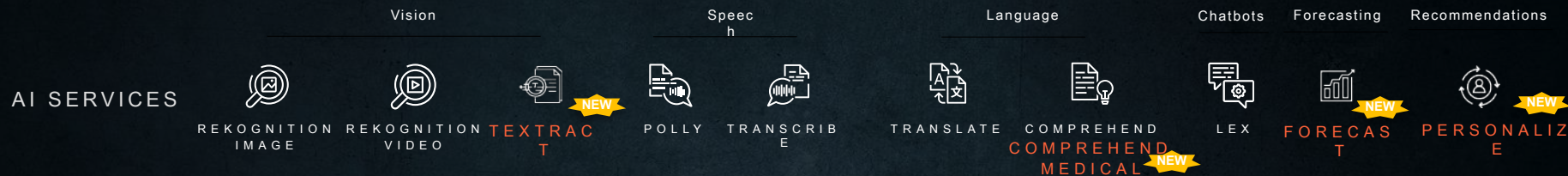
## Embedded R&D

Customer-centric approach to advancing the state of the art

# More ML is built on AWS than anywhere else

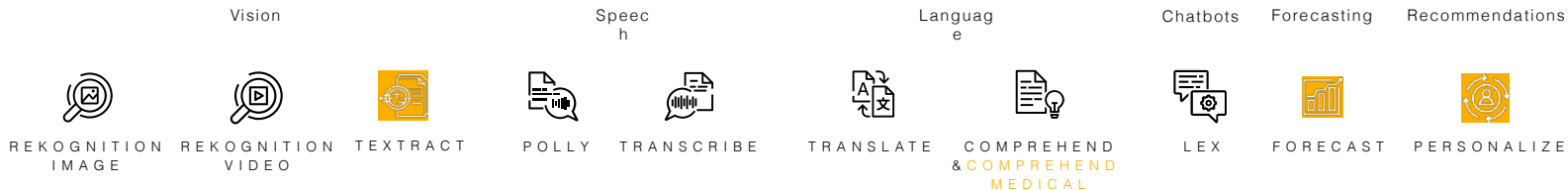


# The Amazon ML Stack: Broadest & Deepest Set of Capabilities

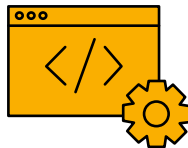


# Put AI to work for your business

## AI SERVICES



Pre-trained AI services that require no ML skills or training



Easily add intelligence to your existing apps and workflows



Quality and accuracy from continuously-learning APIs

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# Amazon Rekognition





# Object & Scene Detection



Culinary	99,8 %
Food	99,8 %
Human	99,5 %
Person	99,5 %
Indoors	65,9 %
Room	56,6 %
Chef	56,1 %




# 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 .jpeg or .png format and no larger than 5MB. Your image isn't stored.

 **Upload** or drag and drop

Use image URL  **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%



≠



≠



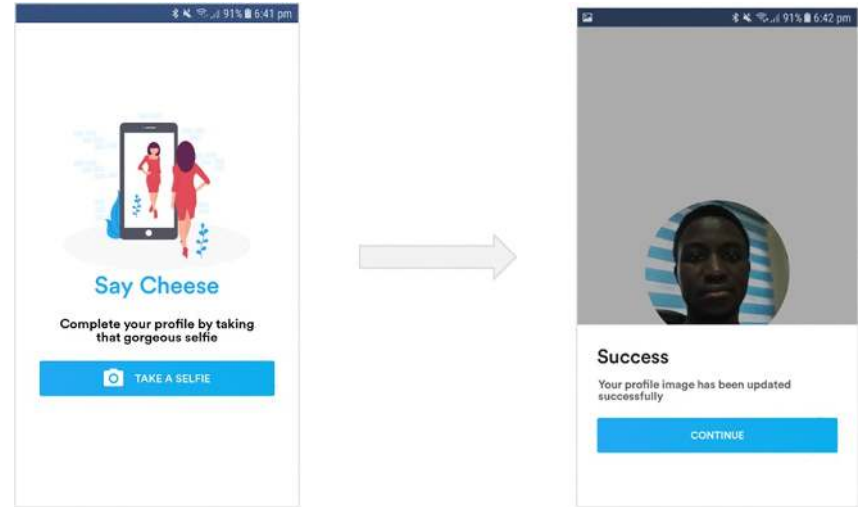
# Aella Credit



Aella Credit is a financial services company based in West Africa that provides **instant loans to individuals** by using biometric and employer data.

In emerging markets, identity verification and validation is a major challenge for people who don't have easy access to retail banking services.

Aella Credit uses **Amazon Rekognition**, for biometric identity verification on their mobile application.



<https://aws.amazon.com/blogs/machine-learning/aella-credit-empowers-underbanked-individuals-by-using-amazon-rekognition-for-identity-verification/>

# Marinus Analytics

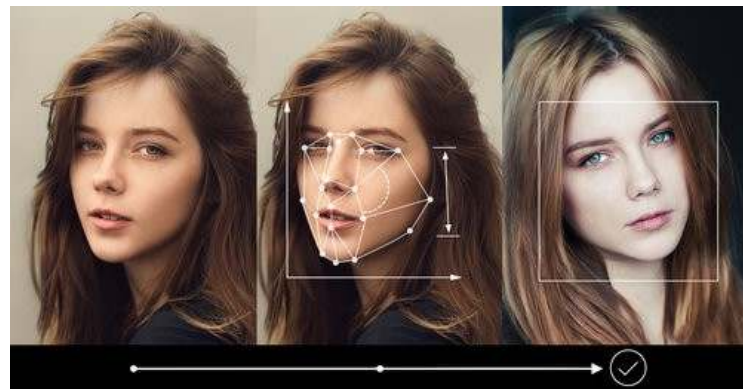


Marinus Analytics provides law enforcement with tools founded in artificial intelligence.

Traffic Jam, is a suite of tools for use by law enforcement agencies on sex trafficking investigations.

Before using **Amazon Rekognition**, their only recourse was manual processing; this was time-intensive or not possible.

Now, investigators are able to take effective action by searching through **millions of records in seconds** to find victims.



<http://www.marinusanalytics.com/articles/2017/10/17/amazon-rekognition-helps-marinus-analytics-fight-human-trafficking>

# Image Moderation



## ▼ Results

<b>Suggestive</b>	<b>83.5%</b>
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

## Celebrity recognition

Rekognition automatically recognizes celebrities in images and provides confidence scores.



Done with the demo?

[Learn more](#)

### ▼ Results



**Yevhen Konoplyanka**

Match confidence

100 %



**Serhiy Rybalka**

Match confidence

99 %



# Text in Image



## ▼ Results

US English only

| 5T6E652 |

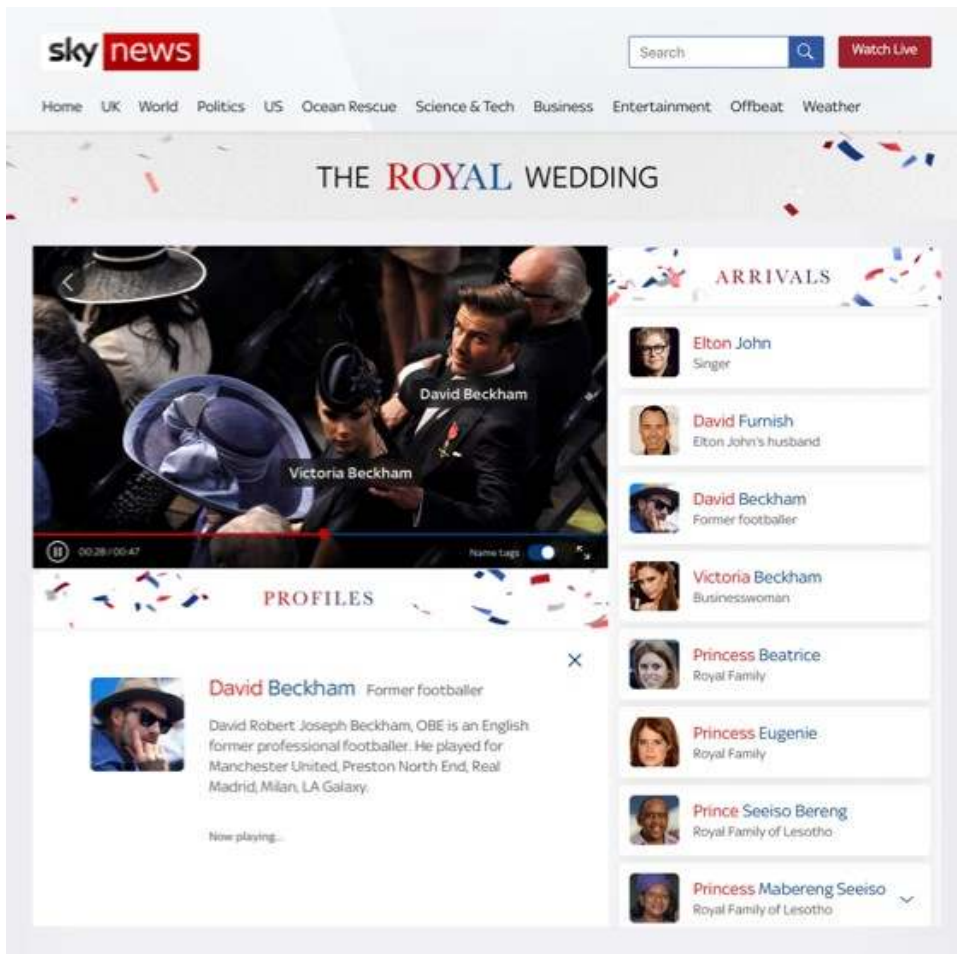
## ► Request

## ▼ 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
          }
        ]
      }
    }
  ]
}
```

# Video Analysis





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

# Amazon Rekognition Benefits

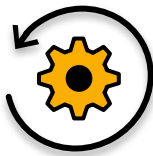
State of the  
art capabilities

---



Continuous  
improvement

---



Rapid  
integration

---



Low cost

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Serverless

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Your data is your own

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# Amazon Polly

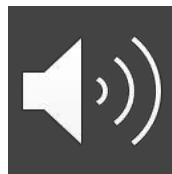


# Amazon Polly: Text In, Life-like Speech Out

“Salut, je  
m’appelle Léa. Je  
suis la nouvelle  
voix française de  
Polly.”



Amazon Polly



# Languages

Arabic (MSA)	Chinese (Mandarin)	Danish	Dutch	English (Australian)
English (British)	English (Indian)	English (US)	English (Welsh)	French
French (Canadian)	German	Hindi	Icelandic	Italian
Japanese	Korean	Norwegian	Polish	Portuguese
Portuguese (Brazilian)	Romanian	Russian	Spanish	Spanish (Mexican)
Spanish (US)	Swedish	Turkish	Welsh	

29 languages, 59 voices



# A Focus On Voice Quality & Pronunciation

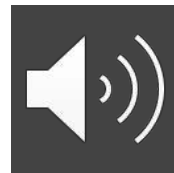
Support for Speech Synthesis Markup Language (SSML) Version 1.0

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

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

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

</speaking>



# Breathing



<https://aws.amazon.com/blogs/machine-learning/amazon-polly-releases-new-ssml-breath-feature/>

<amazon:auto-breaths>

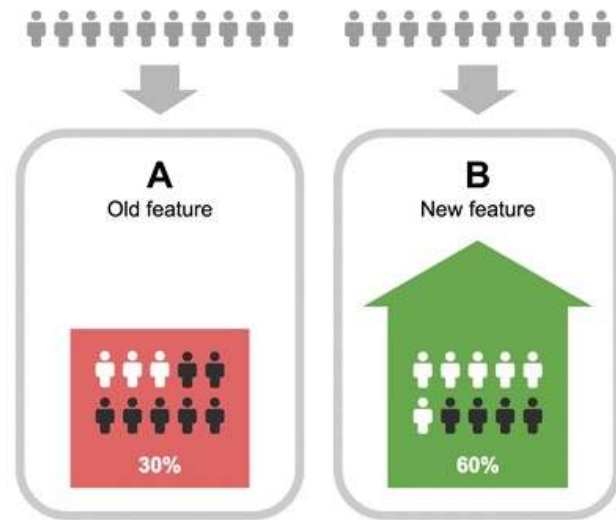
# Duolingo



Duolingo is the most popular language-learning platform and the most downloaded education app in the world, with more than **170 million users**.

They have run six A/B tests, testing an **Amazon Polly** voice against a voice from other TTS providers.

For all of these experiments, the winning condition was the Amazon Polly voice



<https://aws.amazon.com/blogs/machine-learning/powering-language-learning-on-duolingo-with-amazon-polly/>

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# Amazon Translate



# Amazon Translate

Natural and fluent language translation



Real-time  
translation



Batch analysis



Automatic language  
recognition



Low cost

# Languages

Arabic	Chinese (Simplified)	Chinese (Traditional)	Czech	Danish
Dutch	English	Finnish	French	German
Hebrew	Indonesian	Italian	Japanese	Korean
Polish	Portuguese	Russian	Spanish	Swedish
Turkish	Hindi	Farsi	Malay	Norwegian

25 languages, 595 language pairs

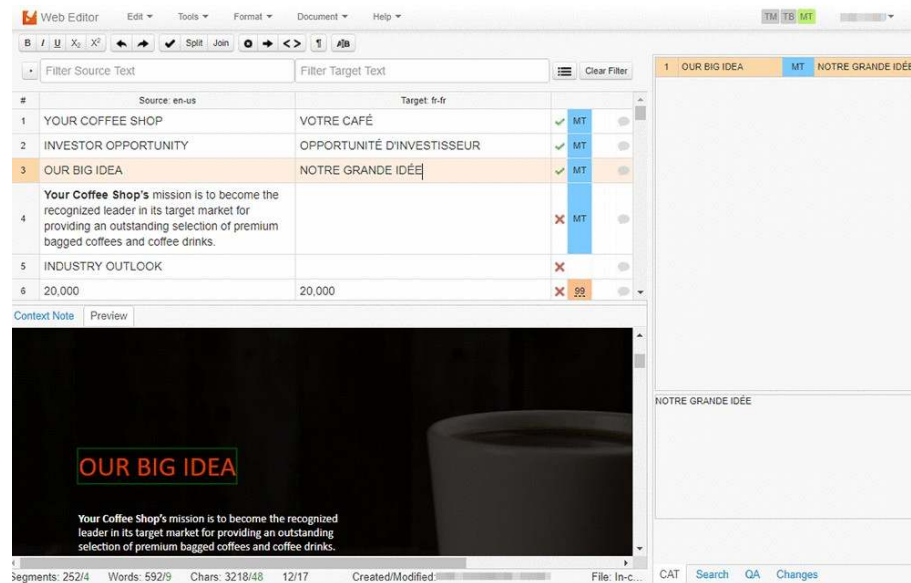
# Memsource



Memsource was founded in 2010 and has become a leader in **cloud-based translation technology**.

Memsource and **Amazon Translate** are connected via the Amazon Translate API.

Results are available in **real-time** from within the Memsource translation workbenches, Memsource Web Editor, and Desktop Editor.



<https://aws.amazon.com/blogs/machine-learning/amazon-translate-now-available-in-the-memsource-translation-management-system/>



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# Amazon Transcribe



# Amazon Transcribe

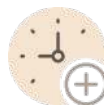
Automatic conversion of speech into accurate, grammatically correct text



10 languages



Intelligent punctuation  
and formatting



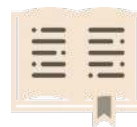
Timestamp  
generation



Support for  
telephony audio



Recognize multiple  
speakers



Custom  
vocabulary

# Languages

Arabic	Australian English	British English	Indian English	US English
French	Canadian French	German	Hindi	Italian
Korean	Brazilian Portuguese	Spanish	US Spanish	

14 languages  
(5 in real-time)

# ringDNA

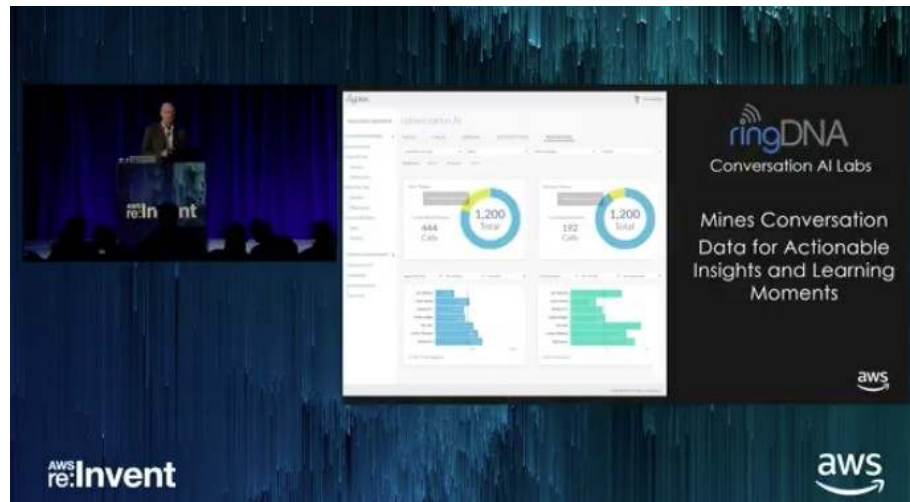


RingDNA is an end-to-end communications platform for sales teams. Hundreds of enterprise organizations use RingDNA to increase productivity, engage in smarter sales conversations, gain predictive insights and improve their win rate.

## Speech to Text

"A critical component of RingDNA's Conversation AI requires best of breed speech-to-text to deliver transcriptions of every phone call. RingDNA is excited about **Amazon Transcribe** since it provides high-quality speech recognition at scale, helping us to better transcribe every call to text"

Howard Brown, CEO & Founder, RingDNA



[https://www.youtube.com/watch?v=1ZJ\\_f1bDdog](https://www.youtube.com/watch?v=1ZJ_f1bDdog)

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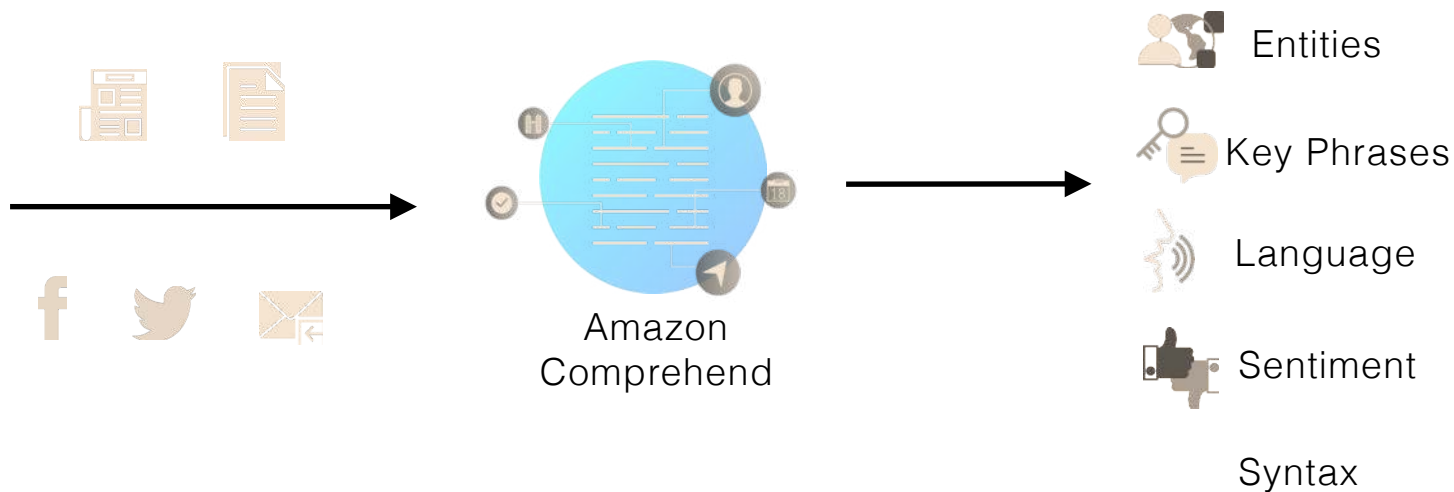
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# Amazon Comprehend



# Fully managed natural language processing

Discover valuable insights from text



# ClearView Social



**CLEAR  
VIEW  
SOCIAL**

ClearView Social enables a company's employees to share approved content on LinkedIn, Twitter, and other social networks.

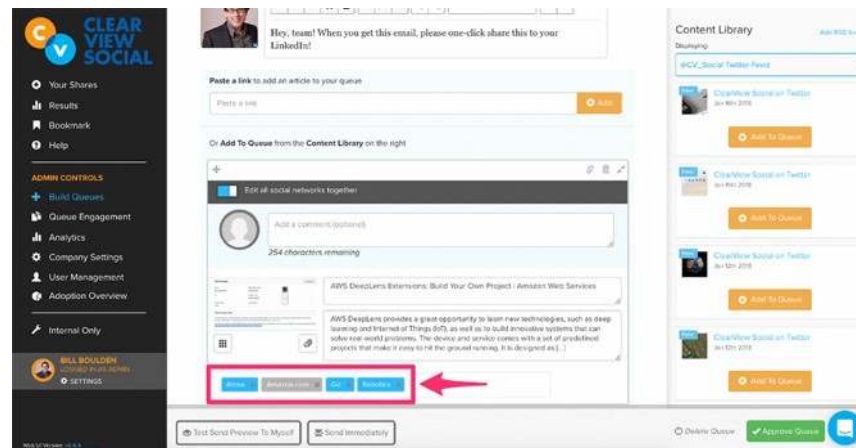
To eliminate the reliance on manual tagging, ClearView Social turned to **Amazon Comprehend** to find **insights** and **relationships** in text.

## Natural Language Processing

"We use **Amazon Comprehend** to read an article and extract topics, which are automatically tagged using machine learning. This automatic tagging helps customers easily estimate the market value of their engagement according to the current bid prices from the Google AdWords

API"

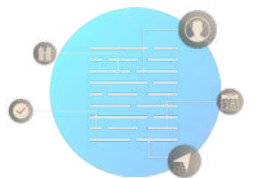
Bill Boulden, CTO, ClearView Social



<https://aws.amazon.com/blogs/machine-learning/clearview-social-uses-amazon-comprehend-to-measure-the-impact-of-social-sharing/>



# Topic modeling



Amazon  
Comprehend

STORM



WORLD  
SERIES



STOCK  
MARKET



WASHINGTON



AUSTRALIA HEALTH



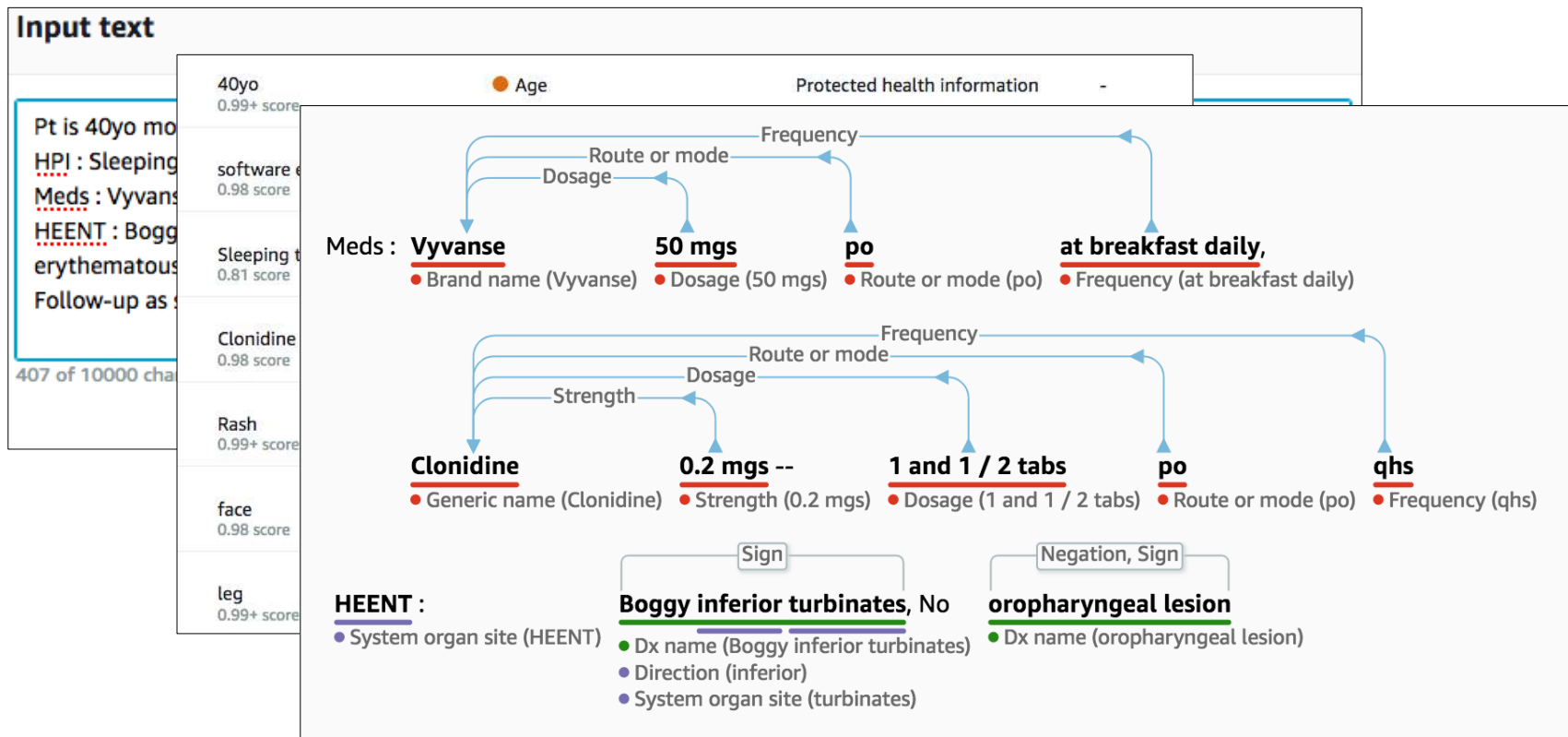
CRISIS



MACHINE  
LEARNING



# Amazon Comprehend Medical



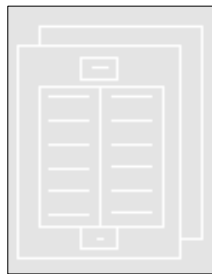
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# Amazon Textract



# Amazon Textract Features



Text extraction

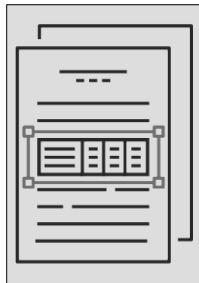
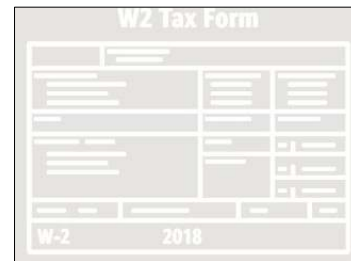


Table extraction



Form extraction

# One line of code!

```
response = client.analyze_document(  
    Document={'S3Object': {'Bucket': bucket, 'Name': document}},  
    FeatureTypes=["TABLES", "FORMS"]  
)
```

# Amazon Textract

## Benefits



Extract data quickly  
and accurately



Eliminate  
manual effort



Lower document  
processing costs



No ML Experience  
Required

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# Amazon Forecast (preview)



AWS

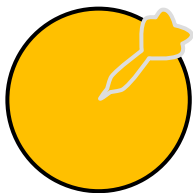
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# Amazon Personalize

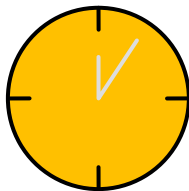


# Amazon Personalize

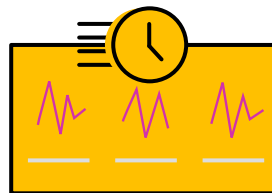
Improve customer experiences with personalization and recommendations



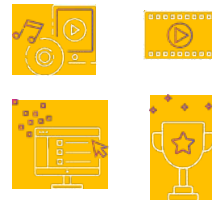
Deliver high quality  
recommendations



Real-time



Deliver  
personalization in  
days, not months



Works with any  
product or content

---

## KEY FEATURES

Context-aware  
Recommendations

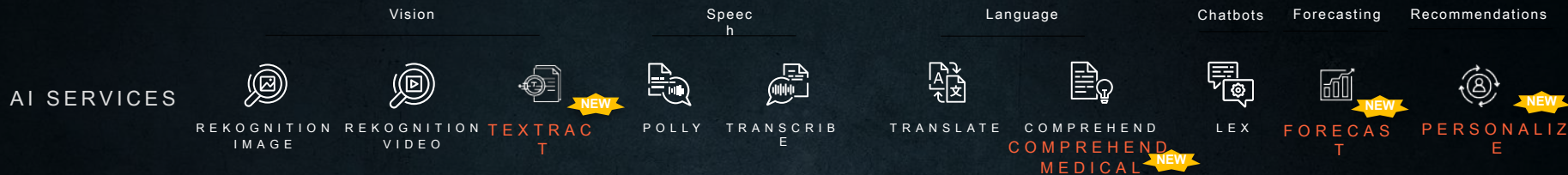
Automated  
machine learning

Continuous learning  
to improve  
performance

Bring existing algorithms  
from Amazon SageMaker



# The Amazon ML Stack: Broadest & Deepest Set of Capabilities



# Resources

<http://aws.amazon.com/free>

<https://ml.aws>

<https://aws.training/machinelearning>

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

<https://medium.com/@julsimon>

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# Thank you!

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