



New AI/ML services AWS re:Invent 2017

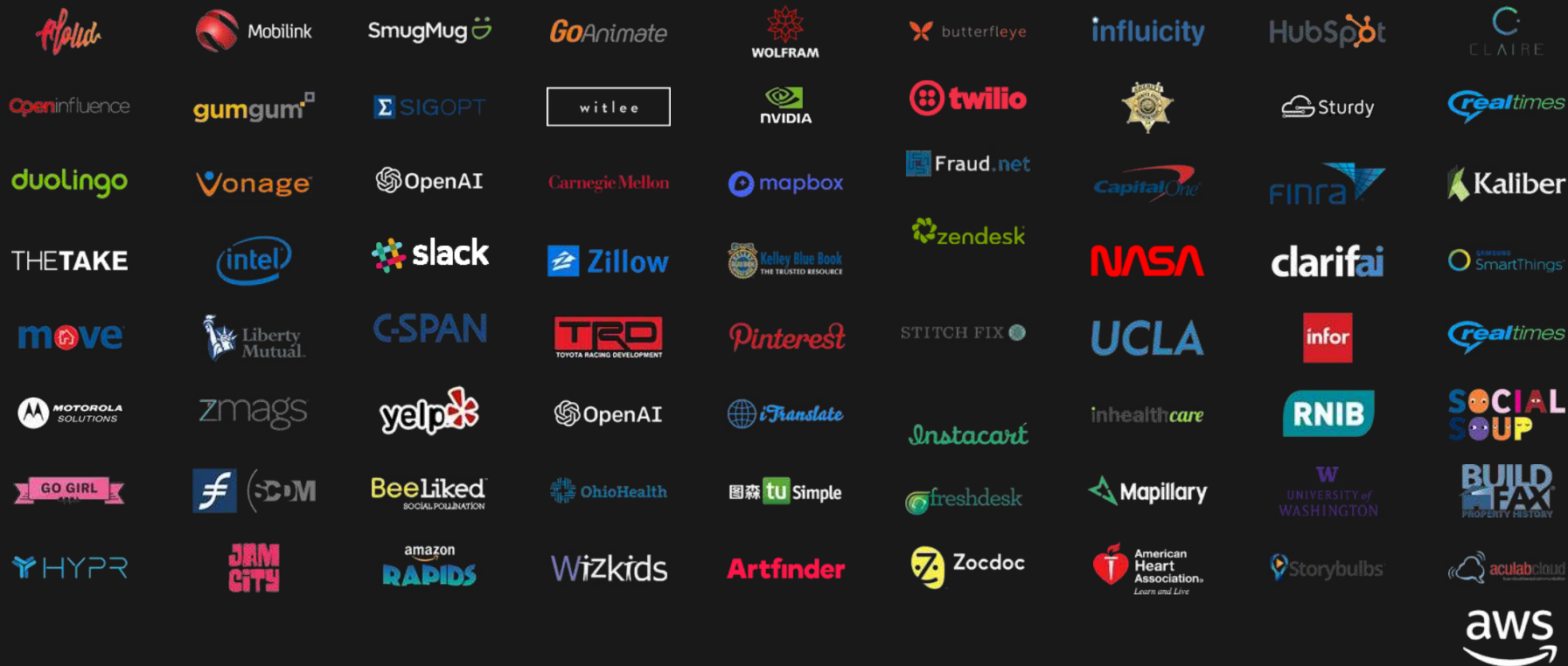
**Julien Simon, AI Evangelist,
EMEA
@julsimon**



ML @ AWS: Our mission

**Put machine learning in the hands of
every developer and data scientist**

Customers Running ML on AWS Today



AWS ML Stack

Application Services

API-driven services: Vision & Language Services, Conversational 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 inference on trained models.

AWS ML Stack

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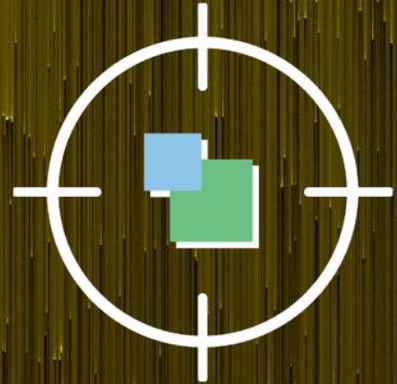
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Amazon Rekognition

Deep learning-based visual analysis service



Deep learning-based visual analysis service



Amazon
Rekognition

Object and scene detection
Facial analysis
Face comparison
Celebrity recognition
Image moderation
Text in image

Amazon Rekognition - Improvements

- Real-time searches
 - Latency reduced by 5-10x
 - Tens of millions of faces
- Detect up to 100 faces (instead of 15)



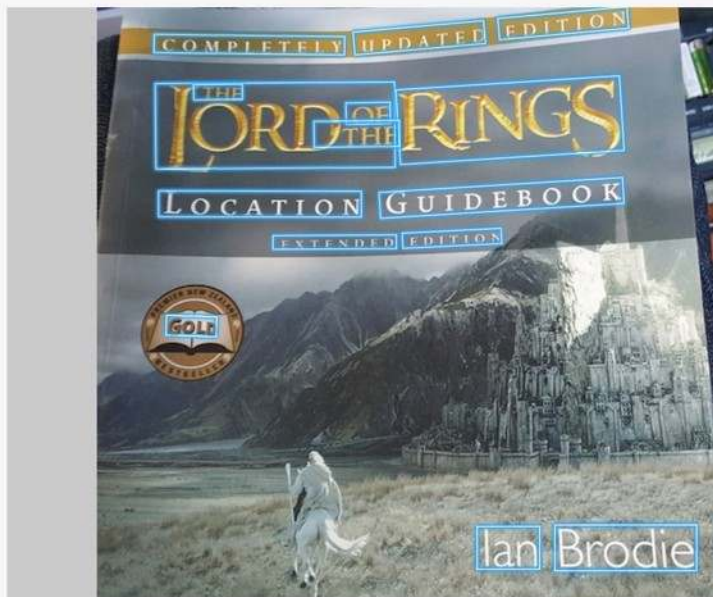
<https://aws.amazon.com/blogs/ai/amazon-rekognition-announces-real-time-face-recognition-support-for-recognition-of-text-in-image-and-improved-face-detection/>



Amazon Rekognition – Text in Image

Text in image

Rekognition automatically detects and extracts text in your images. (Your images aren't stored).



Done with the demo?

[Learn more](#)

▼ Results

US English only

| COMPLETELY | UPDATED | EDITION |
| LORD% | OF | RINGS |
| THE |
| THE |
| LOCATION |
| GUIDEBOOK |
| EXTENDED | EDITION |
| GOLD |
| Ian | Brodie |

► Request



NEW

Amazon Rekognition Video

Deep learning-based visual analysis service

(GA)



Amazon Rekognition Video



Video in. People, activities, and details out.

Objects, scenes, and activities

Person detection and recognition

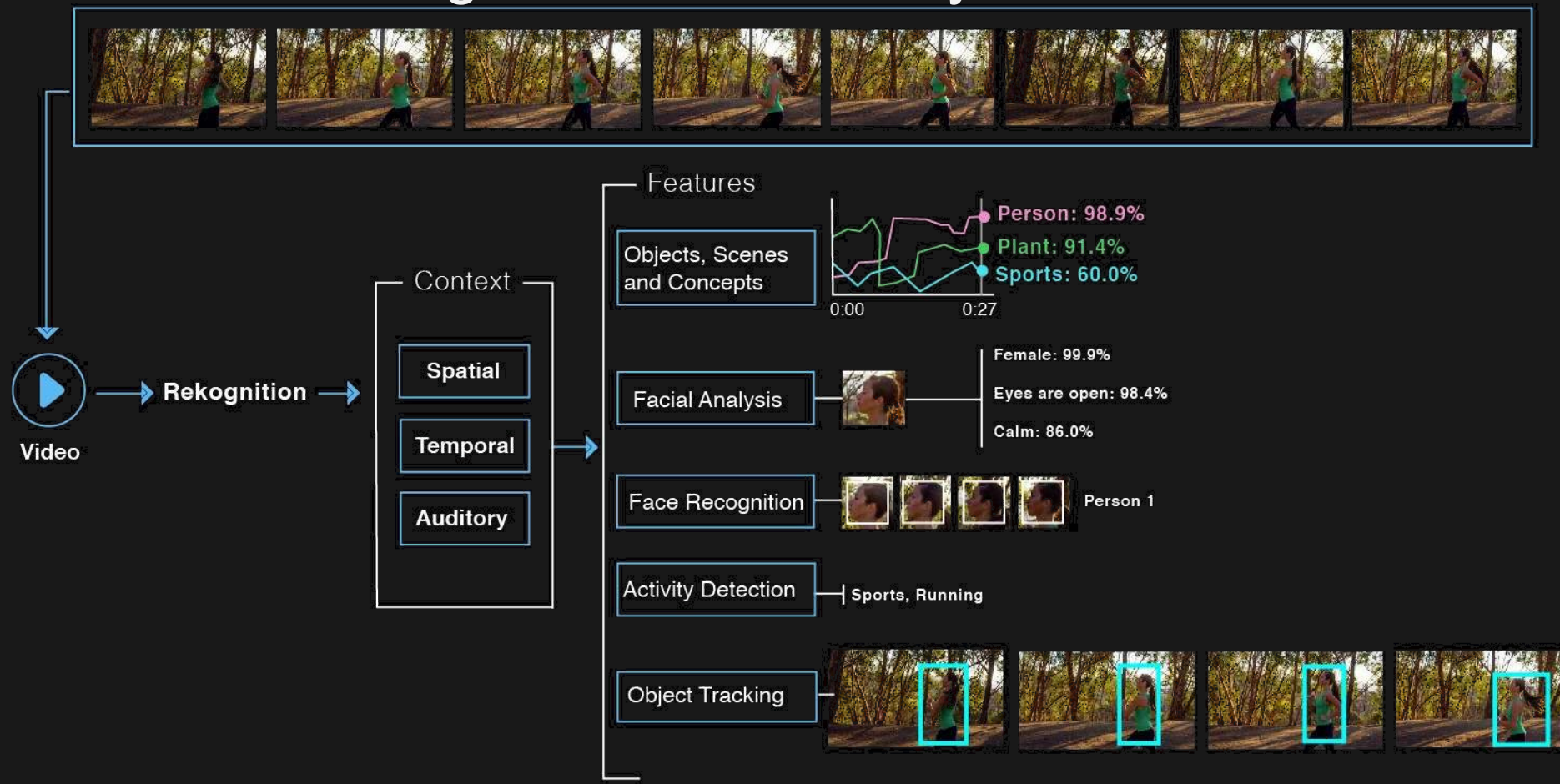
Inappropriate content detection

Celebrity recognition

Person tracking

<https://aws.amazon.com/blogs/aws/launch-welcoming-amazon-rekognition-video-service/>

Amazon Rekognition Video Analysis Service



Results

Here are the results we found sorted by category. The marks on the timeline show where we found results that are selected.

57

All results

1

People

0

Celebrities

56

Objects and activities

0

Moderated labels

Q Search

☐ Select all

▼ Objects and activities

Sunset Nature Outdoors Mountain Sky

Mountain Range Crest Sunrise Dawn Dusk Red Sky

Water Promontory Ocean Sea Sea Waves Fire

Campfire Flame Bonfire Camping Leisure Activities

Rock Person

[Show more](#)

▼ Download response

Download response as JSON file



<http://timescapes.org/trailers/>


Results

Here are the results we found sorted by category. The marks on the timeline show where we found results that are selected.

57 All results	1 People	0 Celebrities	56 Objects and activities	0 Moderated labels
-------------------	-------------	------------------	------------------------------	-----------------------

☐ Select all

▼ People



Person: 7


▼ Download response

Download response as JSON file

⏮

0:44

⏭



0:44 / 0:47

TIMESCAPES

API example

```
aws rekognition start-label-detection
    --video '{"S3Object":{"Bucket":"adhorn-reko","Name":"bourne.mp4"}}'

{
    "JobId": "a89eeae89ec38d8579a3a0bfc2bbf522ea5a939cdf751df4b3872d04e8394496"
}
```

```
aws rekognition get-label-detection
    --jobId "a89eeae89ec38d8579a3a0bfc2bbf522ea5a939cdf751df4b3872d04e8394496"
```



Amazon Rekognition Video Customers



Butterfleye is a cordless security camera for business and home. We believe in smart solutions to protect your business, and your privacy. We develop security platforms that combine activity-based recording, facial recognition and military-grade technology to decide when to record and when to disarm, placing our products at the optimal intersection of security and privacy.

"Butterfleye's mission is to deliver a smart security camera, with real time alerts. Amazon Rekognition Video's real-time face recognition from video live stream will allow us to provide accurate and critical alerts back to our customers. The simple API makes integration with our smart platform fast and easy."

Govind Vaidya, VP of Software Engineering, Butterfleye Inc.



City of Orlando Police Department. OPD is a nationally recognized law enforcement agency that is focused on the safety of our residents, visitors, and businesses. Our job is to protect the citizens of Orlando.

"The City of Orlando is excited to work with Amazon to pilot the latest in public safety software through a unique, first-of-its-kind public-private partnership. Through the pilot, Orlando will utilize Amazon's Rekognition Video and Amazon Kinesis Video Streams technology in a way that will use existing City resources to provide real-time detection and notification of persons-of-interests, further increasing public safety, and operational efficiency opportunities for the City of Orlando and other cities across the nation.

John Mina Police Chief, City of Orlando



Scripps Networks Interactive is a leading developer of engaging lifestyle content in the home, food and travel categories for television, the internet and emerging platforms. Our U.S. lifestyle portfolio comprises popular television and internet brands HGTV, DIY Network, Food Network, Cooking Channel, Travel Channel and Great American Country, which collectively engage more than 190 million consumers each month.

"Licensing media assets is essential to Scripps Networks, Interactive. Consistent and accurate media metadata enables our enterprise and customers to quickly find what they want. Human-based metadata tagging is time-consuming and tedious, and productivity and efficiency can be greatly increased through automation. Amazon Rekognition enables us to quickly and efficiently add value through various automated metadata tagging processes, and images and video segments are much easier to find for our enterprise and our customers. This allows us to increase cycle times, productivity, and efficiency, and adds revenue opportunities that benefit our bottom line".

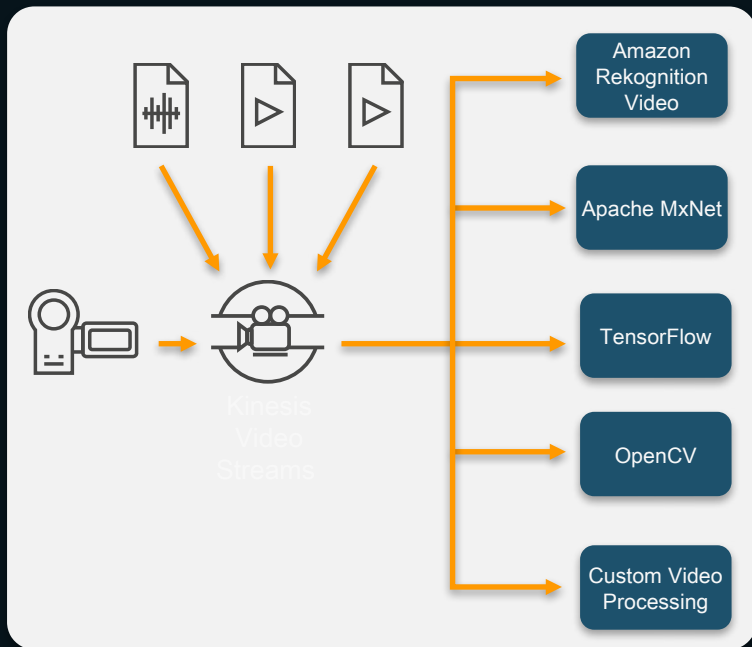
Shane Murphy – Solutions Engineer, Scrippsnetworks

<https://aws.amazon.com/rekognition/customers/>



Amazon Kinesis Video Streams (GA)

Stream video and time-encoded data for analytics



Stream video from millions of devices

Easily build vision-enabled apps

Secure

Durable, searchable storage

Serverless



NEW

Amazon Translate

Neural Machine Translation Service

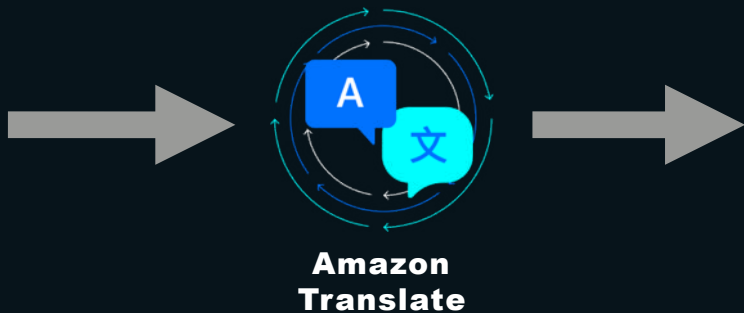
(Preview Today)



Amazon Translate

Natural and fluent language translation

"Hello, what's up? Do you
want to go see a movie
tonight?"



"Bonjour, quoi de neuf ? Tu
veux aller voir un film ce
soir ?"

<https://aws.amazon.com/blogs/aws/introducing-amazon-translate-real-time-text-language-translation/>



Automatically translates text between languages



Real-time translation



Powered by deep
learning



12 Language pairs
(more to come)



Language detection

Supported languages

- You can translate from English to 6 languages (and vice versa)
- Arabic (ar)
- Chinese (Simplified) (zh)
- French (fr)
- German (de)
- Portuguese (pt)
- Spanish (es)

```
aws translate translate-text
--text "Hello, world"
--source-language-code "en"
--target-language-code "zh"

{
  "TargetLanguageCode": "zh",
  "TranslatedText": "你好，世界",
  "SourceLanguageCode": "en"
}
```



API example

```
aws translate translate-text
--text "Amazon Translate uses advanced machine learning technologies to provide
high-quality translation on demand. Use it to translate unstructured text
documents or to build applications that work in multiple languages."
--source-language-code "en"
--target-language-code "fr"

{
    "TargetLanguageCode": "fr",
    "TranslatedText": "Amazon Translate utilise des technologies avancées
d'apprentissage machine pour fournir une traduction de haute qualité sur
demande. Utilisez-le pour traduire des documents texte non structurés ou pour
créer des applications qui fonctionnent en plusieurs langues.",
    "SourceLanguageCode": "en"}
```



Amazon Translate customers



Isentia, headquartered in Sydney, Australia, is a leading media-intelligence provider for the Asia-Pacific region. The company operates from 18 offices across the region and supports more than 5,000 clients worldwide, including 84 of the world's top 100 brands. Isentia's products help customers make more informed and timely business and communication decisions.

"At Isentia, we built our media intelligence software in a single language. To expand our capabilities and address the diverse language needs of our customers, we needed translation support to generate and deliver valuable insights from non-English media content. Having tried multiple Machine Translation services in the past, we are impressed with how easy it is to integrate Amazon Translate into our pipeline and its ability to scale to handle any volume we throw at it. The translations also came out more accurate and nuanced and met our high standards for clients."

Andrea Walsh - CIO, Isentia



Hotels.com is a leading online accommodation booking website with properties ranging from international chains and all-inclusive resorts to local favorites and bed & breakfasts, together with all the information needed to book the perfect stay

"At Hotels.com, we are committed to offering all of our customers the most relevant and up to date information about their destination. To achieve that, we operate 90 localized websites in 41 languages. We have more than 25M Customer reviews and more are coming in every day, making a great candidate for machine translation. Having evaluated Amazon Translate and several other solutions, we believe that Amazon Translate presents a quick, efficient and most importantly, accurate solution. We want to take advantage of the latest advances in machine learning and the transition to Neural engines to further personalize and localize our reviews, and generally improve our customer experience. Amazon Translate is a step forward in that direction."

Matthew Fryer - VP and Chief Data Science Officer, Hotels.com

<https://aws.amazon.com/translate/customers/>

NEW

Amazon Comprehend

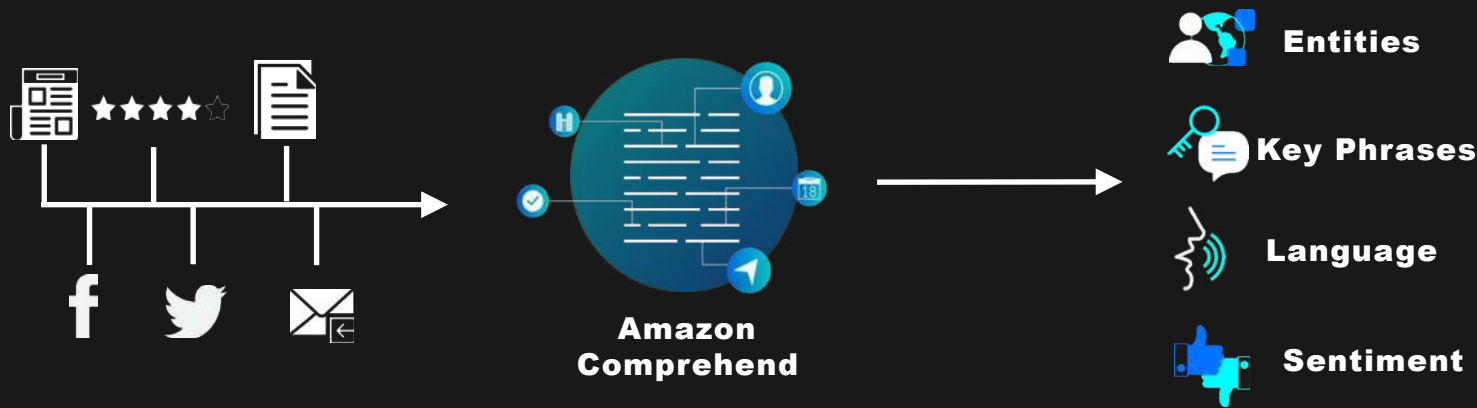
Natural Language Processing

(GA)



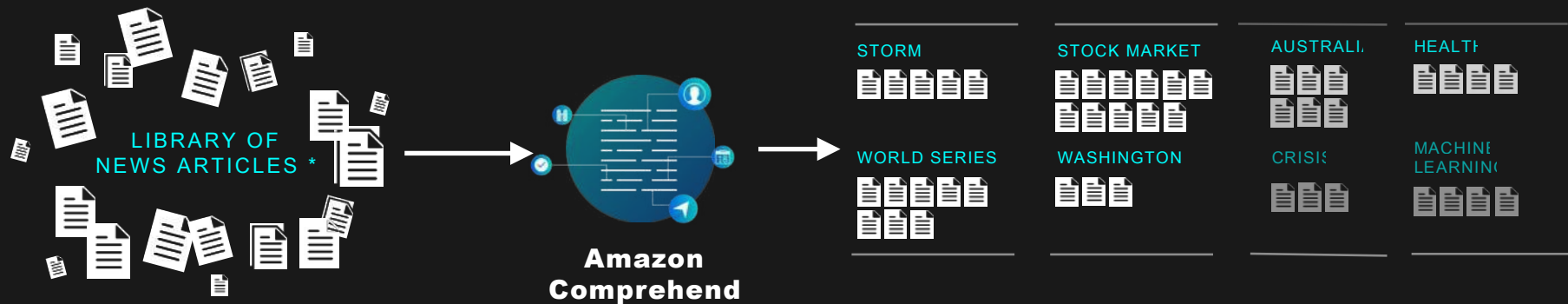
Fully managed natural language processing

Discover valuable insights from text



<https://aws.amazon.com/blogs/aws/amazon-comprehend-continuously-trained-natural-language-processing/>

Support for large data sets and topic modeling



* Integrated with Amazon S3 and AWS Glue

API explorer

Paste the text that you would like to analyze with natural language processing.

Clear text

The accompanying shots from the Newcastle Herald's award-winning team of photographers are worth more than 1000 words apiece. But that's the maximum number of words you will require to have a shot at winning the Herald's sixth annual short story competition. It's time to let your inner author off the leash and allow your imagination to run wild. Stories can be of any genre but must be your own work. The plot must draw inspiration in some way from one of these four images. Herald photographers Simone De Peak, Marina Neil, Jonathan Carroll and Max Mason-Hubers captured the evocative pictures. Stories submitted for the competition must be between 900 and 1000 words. Judges include Newcastle Writers Festival director Rosemarie Milsom, Herald deputy editor Matt Carr, Hunter Writers Centre director Karen Crofts and president Megan Buxton, and Fairfax Media's Newcastle-Hunter group managing editor Chad Watson.

4

916 of 1000 characters used

Language English

Analyze

Entity

This API returns the named entities ("Person", "Organization", "Locations", etc.) within the text you analyzed.

List Tiles JSON Filter Show all categories

Entity	Category	Count	Confidence
Newcastle Herald	Organization	1	0.89
more than 1000 words	Quantity	1	0.91
Herald	Organization	2	0.46
sixth annual short story competition	Quantity	1	0.79
one	Quantity	1	0.4
four images	Quantity	1	0.96
Simone De Peak	Person	1	0.99
Marina Neil	Person	1	0.99+
Jonathan Carroll	Person	1	0.99+
Max Mason-Hubers	Person	1	0.99
900	Quantity	1	0.99

Show all

Topic modeling

Amazon Comprehend will manage the lifetime on your completed topic detection jobs. Completed jobs are cleaned up periodically. The results from successfully completed jobs are persisted indefinitely, until you choose to remove them.

Create



viewing 1 to 1 items

Job name	Job ID	Start time	End time	Status
TopicModelJob	346f527bbd09fb370be7e9f46ad7d249	11/12/2017, 22:34:29	11/12/2017, 22:42:38	Completed

Job info

Job name	TopicModelJob
Job ID	346f527bbd09fb370be7e9f46ad7d249
Analysis type	Topic modeling
Number of topics	10
Start time	11 Dec 2017 20:34:29 GMT
End time	11 Dec 2017 20:42:38 GMT
Status	COMPLETED
Job information	--

Actions

Input data location	s3://public-sample-us-east-1
Output data location	s3://adhorn-topicmodeling-output/322549714802-346f527bbd09fb370be7e9f46ad7d249-1513024469818/output/output.tar.gz

API example

```
aws comprehend detect-sentiment
  --text "I love you"
  --language-code "en"
```

```
{
  "SentimentScore":
    {
      "Mixed": 0.005664939060807228,
      "Positive": 0.9262985587120056,
      "Neutral": 0.06511948257684708,
      "Negative": 0.0029170133639127016
    },
  "Sentiment": "POSITIVE"
}
```



Amazon Comprehend customers



Hotels.com is a leading global lodging brand operating 90 localized websites in 41 languages.

"Providing locally relevant personalized travel experiences is the goal at Hotels.com. Hence helping our customers find the right experience is crucial. Amazon Comprehend helps us analyze the key sentiments, objects, and geos in our 30 million plus reviews & testimonies. Now we are able to discover new insights into the unique experiences available at each property, so our customers can make the best decision possible for their travel."

– Matt Fryer, VP and Chief Data Science Officer of Hotels.com and Expedia Affiliate Network



The Washington Post is an American daily newspaper.

"The Post strives to give its nearly 100 million readers the best experience possible and relevant content recommendations are a key part of that mission. With Amazon Comprehend, we can leverage the continuously-trained NLP capabilities like Keyphrase and Topic APIs to potentially allow us to provide even better content personalization, SEO, and ad targeting capabilities."

– Dr. Sam Han (PhD), Director of Data Science at The Washington Post



Elementum is an online platform that unifies procurement, logistics, manufacturing, and inventory operations in real time.

"Natural language processing (NLP) is hard. We've looked at everything from closed to open source solutions to analyze and make sense of our data, but couldn't find a practical solution that would allow us to stay agile, scalable, and cost-effective as it relates to NLP. Amazon Comprehend's continuously-trained model allows us to focus on our business and innovate in Supply Chain Management (SCM)"

– Minh Chau, Head of Engineering at Elementum



Infor is an enterprise software provider and strategic technology partner for more than 90,000 organizations worldwide.

"Building intelligent applications to help customers drive their businesses is our entire focus. Amazon Comprehend allows us to analyze unstructured text within search, chat, and documents to understand intent and sentiment. This capability enables us to train our Coleman AI skillset, and also provide a truly focused and tailored search experience for our customers."

– Manjunath Ganimasty, V.P. Software Development with Infor

<https://aws.amazon.com/comprehend/customers/>

AWS ML Stack

Application Services

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Platform Services

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

Frameworks & Infrastructure

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NEW

Amazon SageMaker

A fully managed service to quickly and easily
build machine-learning based models

(GA)



NEW

AWS DeepLens

Deep learning enabled video camera for
developers

(Pre-order Today)



AWS DeepLens

World's first deep learning enabled video camera for developers



A new way to learn

Custom built for deep learning

Broad Framework Support

Deploy models from Amazon SageMaker

Integrated with AWS

Full programmable with AWS Lambda

10 minutes to your first deep learning project

1

Choose your deep learning model from the AWS DeepLens pre-trained model library, or your own models trained with Amazon SageMaker.

2

Deploy your model to the device with a single click.

3

Watch the results in real time in the AWS Management Console .



AWS Greengrass ML Inference (Preview)

Run machine learning models on the edge



Access
models
trained in the
cloud



Built in
package for
Apache
MXNet



Local ML
inferencing



Access GPUs
and FPGAs



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Amazon EC2 P3 Instances (October 2017)

The fastest, most powerful GPU instances in the cloud

- Up to eight NVIDIA Tesla V100 GPUs
- 1 PetaFLOPs of computational performance
 - *14x better than P2*
- 300 GB/s GPU-to-GPU communication (NVLink) – *9X better than P2*
- 16GB GPU memory with 900 GB/sec peak GPU memory bandwidth



AWS Deep Learning AMI

- Easy-to-launch tutorials
- Hassle-free setup and configuration
- Pay only for what you use
- Accelerate your model training and deployment
- Support for popular deep learning frameworks



GLUON



Caffe2

PYTORCH



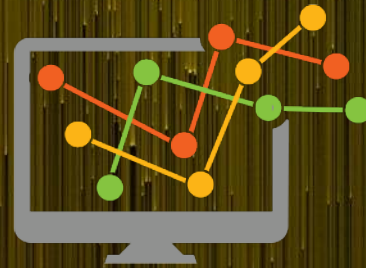
MATRIX
ANALYTICS



NEW

Amazon ML Lab

Provides the missing ML expertise



Amazon ML Lab

<https://aws.amazon.com/ml-solutions-lab>



Lots of companies
doing Machine
Learning

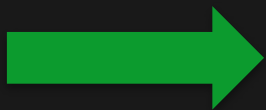


Lack ML
expertise



Unable to unlock
business potential

Amazon ML Lab
provides the missing
ML expertise



Leverage Amazon experts with decades of ML
experience with technologies like Amazon Echo,
Amazon Alexa, Prime Air and Amazon Go



Brainstorming



Modeling



Teaching



Democratization of AI

APPLICATION SERVICES



**Amazon
Rekognition**



**Amazon
Polly**



**Amazon
Lex**

**Amazon
Comprehend**



**Amazon
Rekognition
Video**

**Amazon
Transcribe**

**Amazon
Translate**

PLATFORM SERVICES

Amazon SageMaker

AWS DeepLens

Amazon EMR

FRAMEWORKS AND INTERFACES

**Deep
Learning AMI**

Apache MXNet

Caffe2

CNTK

PyTorch

TensorFlow

Theano

Torch

Keras

Gluon

Resources

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

<https://aws.amazon.com/blogs/ai>

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



Thank you!

**Julien Simon, AI Evangelist,
EMEA
@julsimon**

