

# Building smart applications with AWS AI services

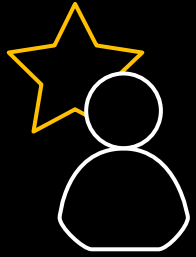
Julien Simon

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@julsimon

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

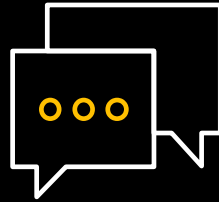
# AI is central to digital transformation



Customer  
experience



Business  
operations



Decision  
making



Innovation



Competitive  
advantage

40%

of digital transformation initiatives  
supported by AI in 2019

—IDC 2018

# More AI/ML happens on AWS than anywhere else

10,000+ active customers



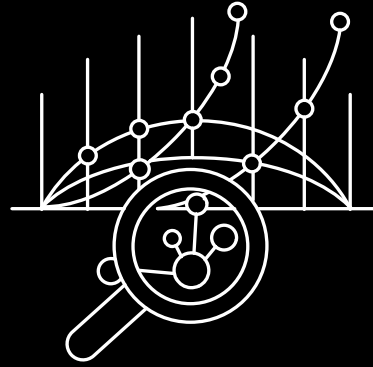
<https://aws.amazon.com/machine-learning/customers/>





## Customer-focused

90%+ of our roadmap is defined by customers



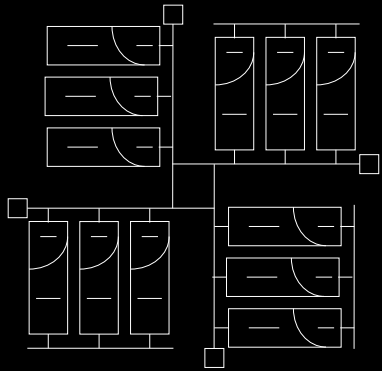
## Pace of innovation

200+ new AI/ML launches and major feature updates last year



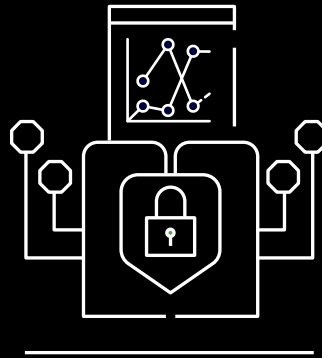
## Breadth and depth

A wide range of AI/ML services



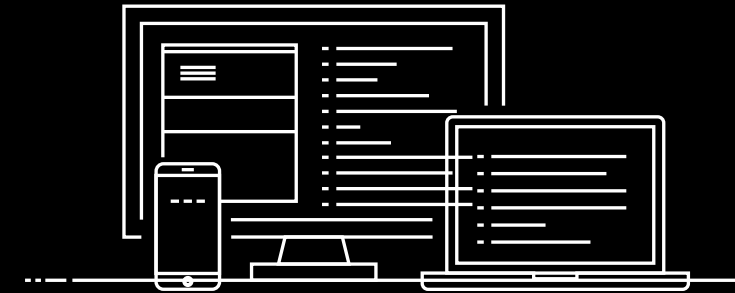
## Multi-framework

Support for the most popular ML frameworks



## Security and analytics

Deep set of security with robust encryption and analytics













## Embedded R&D

Customer-centric approach

# The AWS AI/ML Stack

Broadest and deepest set of capabilities















## AI Services

VISION			SPEECH		LANGUAGE		CHATBOTS	FORECASTING	RECOMMENDATIONS
									
AMAZON REKOGNITION IMAGE	AMAZON REKOGNITION VIDEO	AMAZON TEXTTRACT	AMAZON POLLY	AMAZON TRANSCRIBE	AMAZON TRANSLATE	AMAZON COMPREHEND & COMPREHEND MEDICAL	AMAZON LEX	AMAZON FORECAST	AMAZON PERSONALIZE

## ML Services

 Amazon SageMaker								
	Ground Truth	Notebooks	Algorithms + Marketplace	Reinforcement Learning	Training	Optimization	Deployment	Hosting

## ML Frameworks + Infrastructure

FRAMEWORKS	INTERFACES	INFRASTRUCTURE									
 TensorFlow  mxnet   PYTORCH	 GLUON   Keras	 EC2 P3 & P3DN	 EC2 G4 EC2 C5	 FPGAs	 AWS DL CONTAINERS & AMIs	 AMAZON ELASTIC CONTAINER SERVICE	 AMAZON ELASTIC KUBERNETES SERVICE	 AWS IoT GREENGRASS	 AMAZON ELASTIC INFERENCE	 AWS INFERENTIA	











<https://ml.aws>

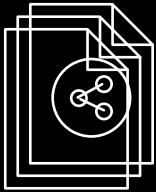


# The AWS AI/ML Stack

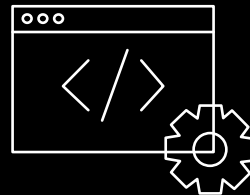
Broadest and deepest set of capabilities

## AI Services

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IMAGE & FACE ANALYSIS			TEXT TO SPEECH	SPEECH TO TEXT	TRANSLATION	NATURAL LANGUAGE UNDERSTANDING			



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

# Put AI to work for your business

Automate media workflows to reduce costs and monetize content

content moderation | contextual ad insertion | searchable media library  
face analytics | multi-language metadata search



REKOGNITION  
IMAGE



REKOGNITION  
VIDEO



COMPREHEND



TRANSCRIBE



TRANSLATE



TEXTTRACT

C-SPAN

POPSUGAR

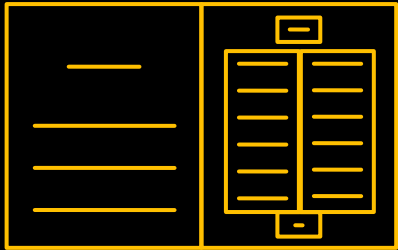
sky news

Popsa

# Amazon Textract

Extract text and data from virtually any document

<https://aws.amazon.com/blogs/machine-learning/automatically-extract-text-and-structured-data-from-documents-with-amazon-textract/>



Extract data quickly  
and accurately



Eliminate  
manual effort



Lower document  
processing costs

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## KEY FEATURES

Optical character  
recognition (OCR)

Key-value pair  
detection

Table  
detection

Adjustable  
confidence  
thresholds

Bounding box  
coordinates

No ML experience  
required



# Demo

# One line of code

```
response = textract.analyze_document(  
    Document={ 'S3Object' :  
        { 'Bucket' : bucket_name,  
          'Name'   : document_name }  
    },  
    FeatureTypes=["TABLES", "FORMS"]  
)
```

# Put AI to work for your business

Reduce localization costs and improve accuracy

custom vocabulary | timestamp generation | secure real-time translation | language identification



POLLY



TRANSCRIBE



TRANSLATE



COMPREHEND

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 isentia

Hotels.com

 ringDNA

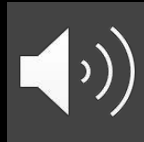
Lionbridge

# Amazon Polly NTTS and newscaster style

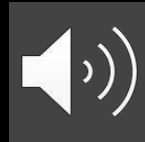
<https://aws.amazon.com/blogs/aws/amazon-polly-introduces-neural-text-to-speech-and-newscaster-style/>

## US English Matthew voice

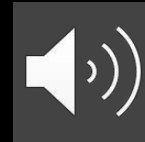
“Sources tell CNN he believes the media and the northeast elite are needlessly hyperventilating and overreacting to his comments.”



Standard



NTTS



Newscaster  
NTTS

# One line of code

```
response = polly.synthesize_speech(  
    OutputFormat='mp3',  
    Text='Hi, my name is Matthew',  
    VoiceId='Matthew',  
    Engine='neural'  
)
```

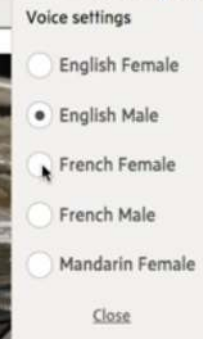
# Combining Translate and Polly

## The colour of money: How the Royal Canadian Mint is using cutting-edge laser technology to give coins a surprising new look

Using powerful infrared light, researchers have found a way to tint metal without dyes or pigments – with scientific implications far beyond coin-collecting

IVAN SEMENIUK > SCIENCE REPORTER  
PUBLISHED JUNE 30, 2019

24 COMMENTS



Select your voice and language

<https://www.theglobeandmail.com/inside-the-globe/article-new-to-the-globe-listen-to-articles-in-english-french-or-mandarin/>

# Put AI to work for your business

Understand the voice of your customer

sentiment analysis | app localization | translation services | transcription services | cataloging media | accessibility



REKOGNITION  
IMAGE



REKOGNITION  
VIDEO



TRANSCRIBE



TRANSLATE



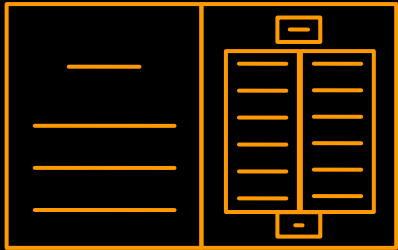
COMPREHEND



# Amazon Translate

Natural and accurate language translation

<https://aws.amazon.com/blogs/aws/new-languages-for-amazon-translate-greek-hungarian-romanian-thai-ukrainian-urdu-and-vietnamese/>



Translate texts quickly  
and accurately



Eliminate  
manual effort



Lower translation costs

---

## KEY FEATURES

32 languages,  
987 language pairs

Language  
detection

Custom  
terminology

Real-time  
translation

No ML experience  
required



# Demo

# One line of code

```
response = translate.translate_text(  
    SourceLanguageCode='auto',  
    TargetLanguageCode='ro',  
    Text='Les sanglots longs des violons de l'automne  
        blessent mon coeur d'une langueur monotone'  
)  
  
print(response['TranslatedText'])  
Sufletele lungi ale viorilor de toamnă mi-au rănit inima  
cu o lăcomie monotonă
```

# Put AI to work for your business

Personalize customer experiences with targeted recommendations

recommendation technology used by Amazon.com | context-aware recommendations  
sentiment analysis | VoC analytics



PERSONALIZE



REKOGNITION  
IMAGE



REKOGNITION  
VIDEO



COMPREHEND



# Amazon Personalize

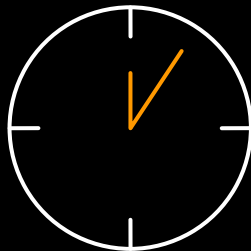
Improve customer experiences with personalization and recommendations

<https://aws.amazon.com/blogs/aws/amazon-personalize-is-now-generally-available/>

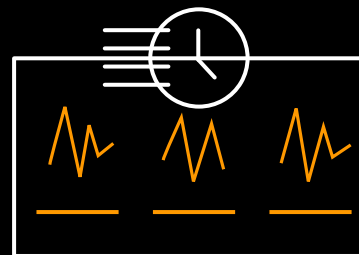
<https://aws.amazon.com/blogs/aws/amazon-personalize-real-time-personalization-and-recommendation-for-everyone/>



Deliver high quality recommendations



Real-time



Deliver personalization in days, not months



Works with any product or content

## KEY FEATURES

Simple data schemas

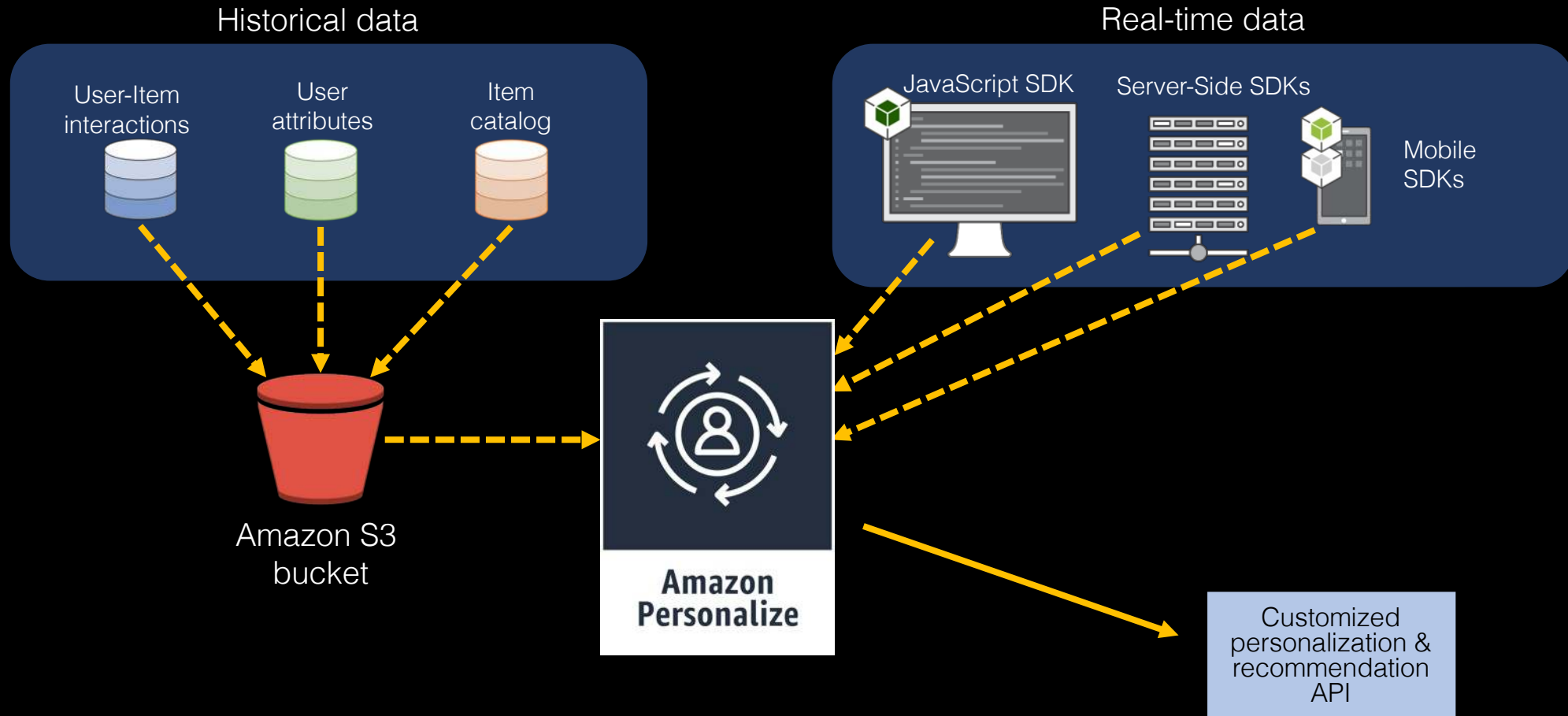
Pre-defined or custom recipes

Automated machine learning and tuning

Fully-managed infrastructure

Based on the technology used at Amazon.com

# From data set to prediction API



# Getting started

Read: <https://ml.aws>

Learn: <https://aws.training/machinelearning>

Experiment: <https://aws.amazon.com/free>

# Thank you!

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