



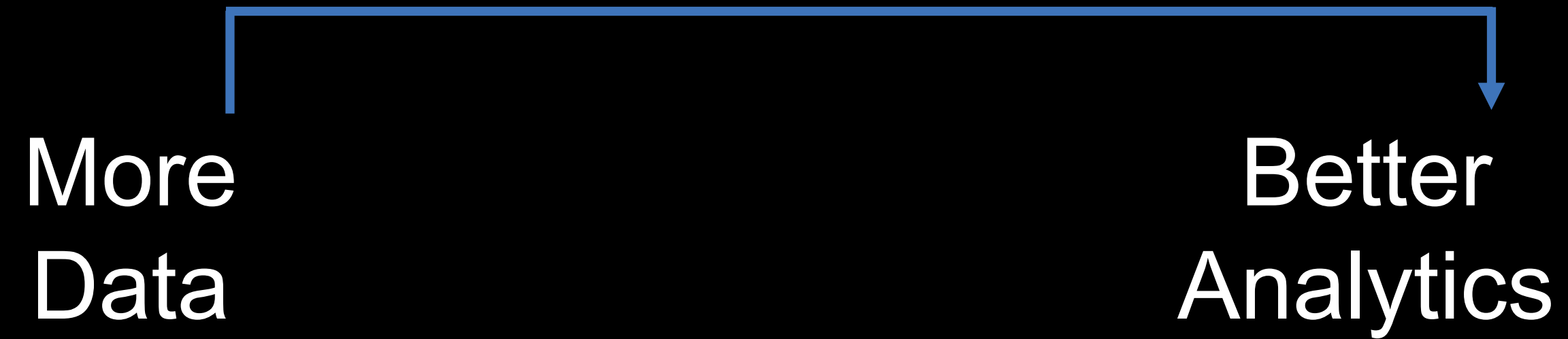
# Amazon AI for every developer

Julien Simon

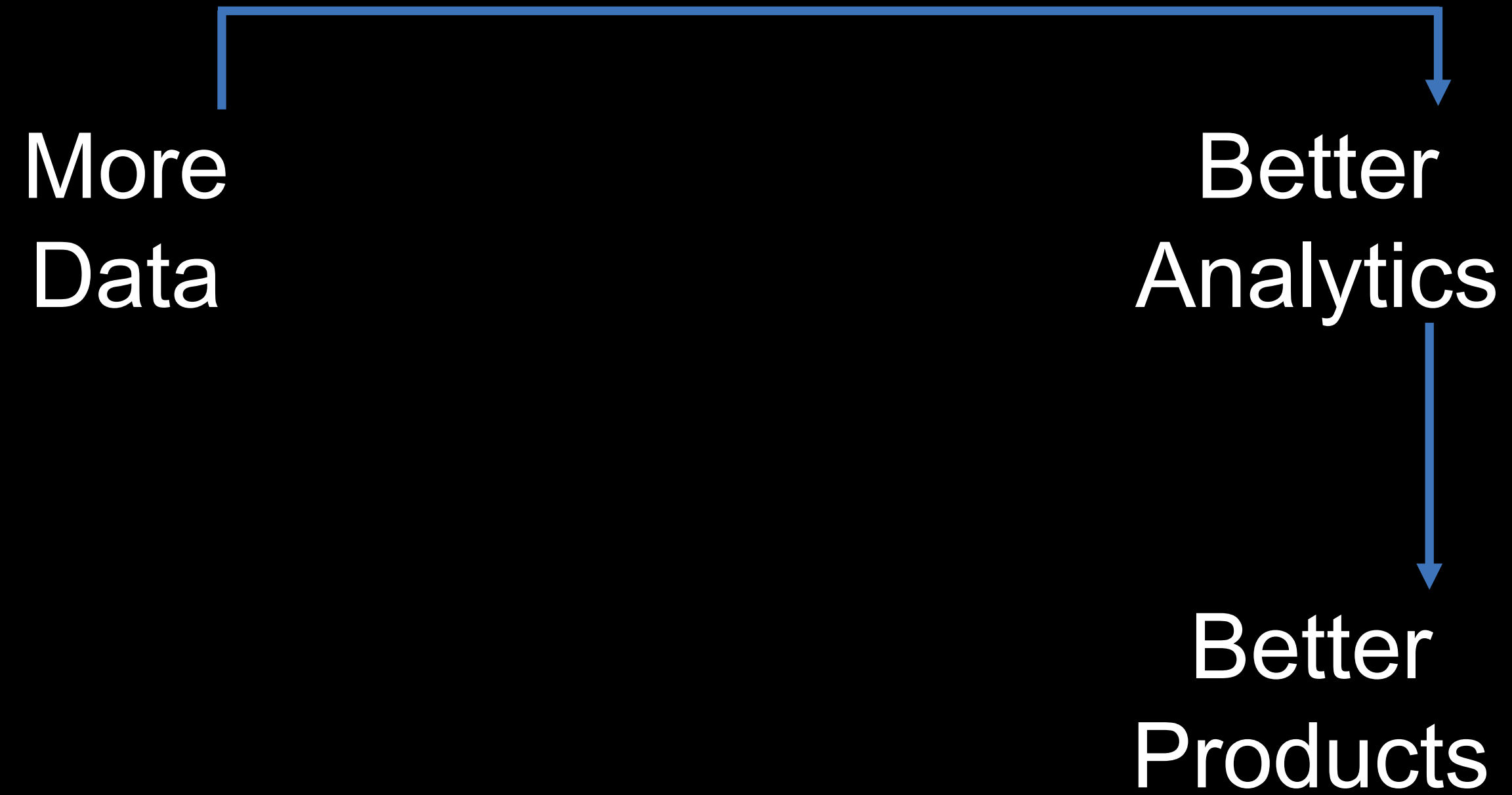
AI Evangelist, EMEA

@julsimon

# A Flywheel For Data



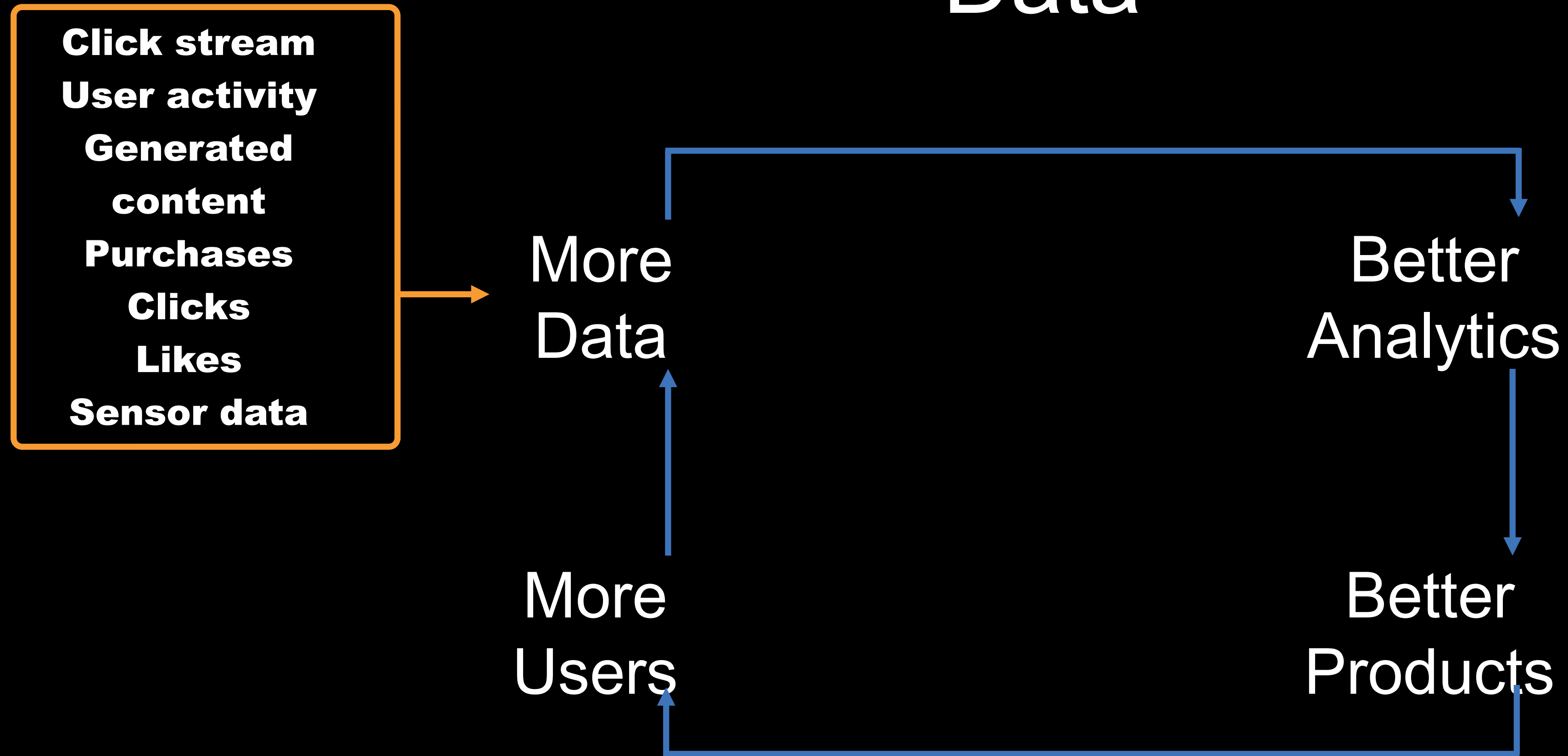
# A Flywheel For Data



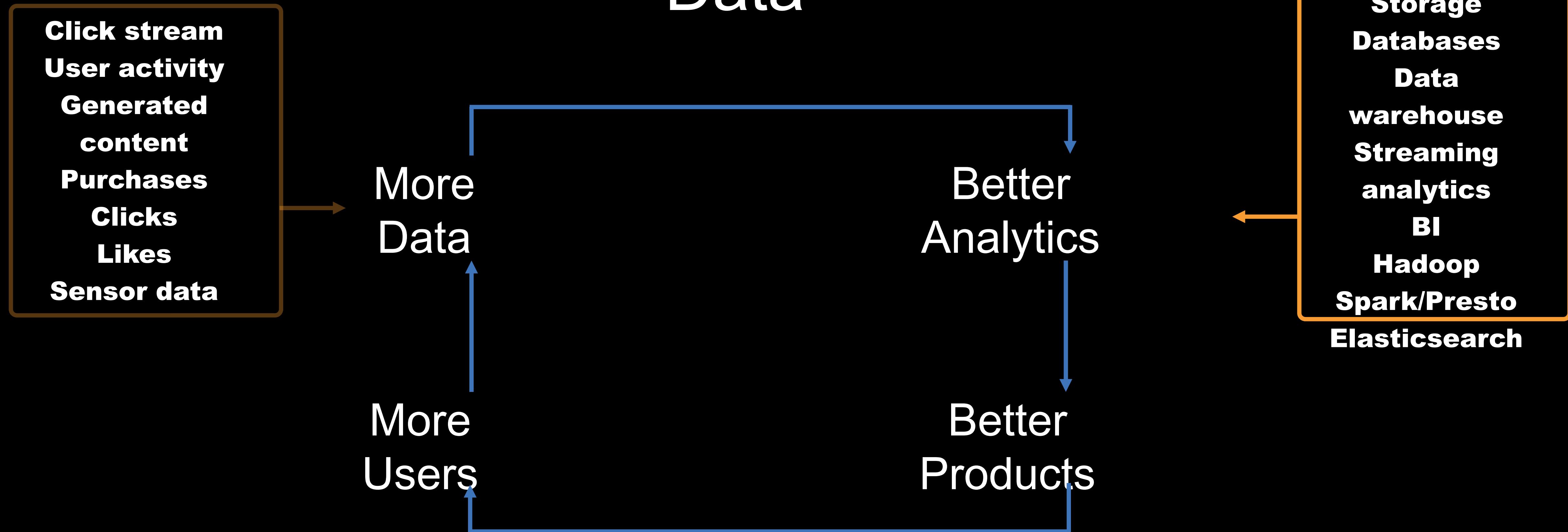
# A Flywheel For Data



# A Flywheel For Data

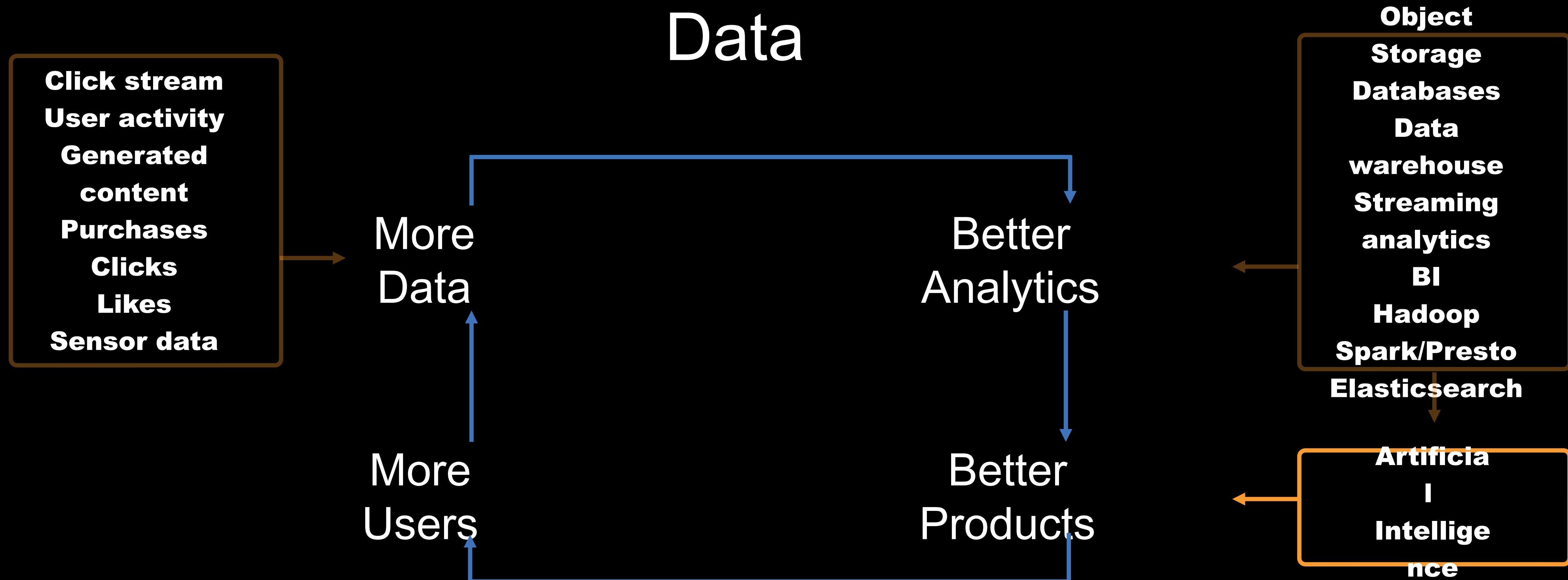


# A Flywheel For Data

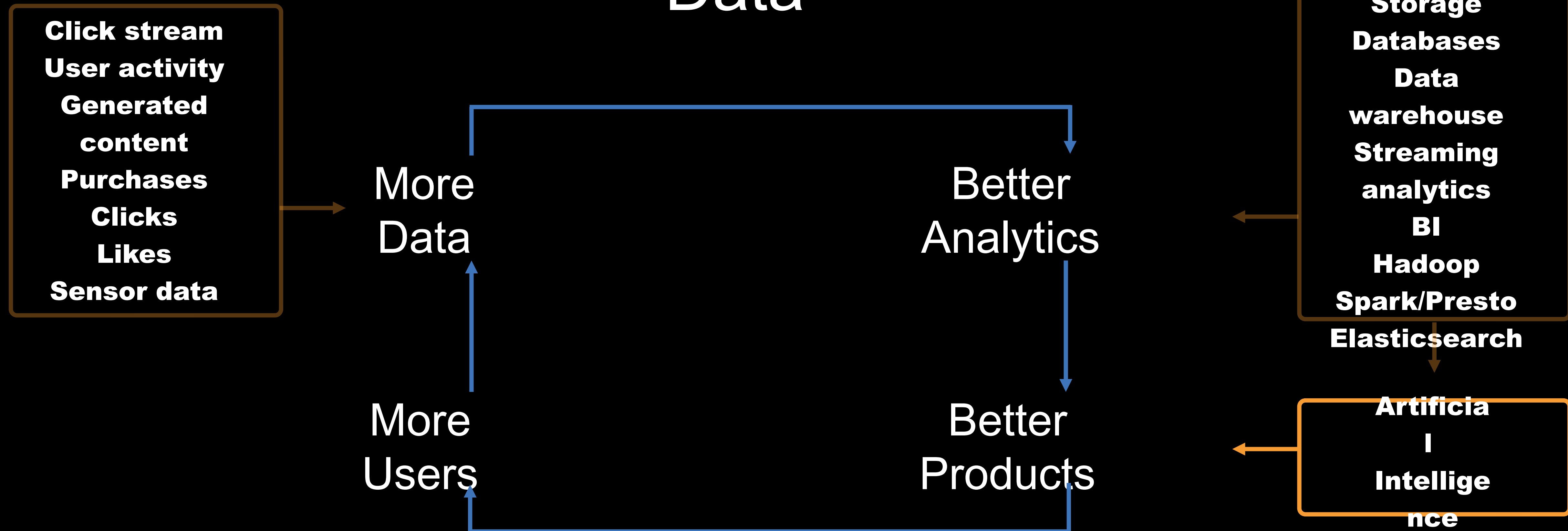




# A Flywheel For Data



# A Flywheel For Data





- **Artificial Intelligence**: design software applications which exhibit human-like behavior, e.g. speech, natural language processing, reasoning or intuition
- **Machine Learning**: teach machines to learn without being explicitly programmed
- **Deep Learning**: using neural networks, teach machines to learn from complex data where features cannot be explicitly expressed



## Welcome to Amazon.com Books!

*One million titles,  
consistently low prices.*

(If you explore just one thing, make it our personal notification service. We think it's very cool!)

### SPOTLIGHT! -- AUGUST 16TH

These are the books we love, offered at Amazon.com low prices. The spotlight moves **EVERY** day so please come often.

### ONE MILLION TITLES

Search Amazon.com's [million title catalog](#) by author, subject, title, keyword, and more... Or take a look at the [books we recommend](#) in over 20 categories... Check out our [customer reviews](#) and the [award winners](#) from the Hugo and Nebula to the Pulitzer and Nobel... and [bestsellers](#) are 30% off the publishers list...

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Like to know when that book you want comes out in paperback or when your favorite author releases a new title? Eyes, our tireless, automated search agent, will send you mail. Meanwhile, our human editors are busy previewing galleys and reading advance reviews. They can let you know when especially wonderful works are published in particular genres or subject areas. Come in, [meet Eyes](#), and have it all explained.

### YOUR ACCOUNT

Check the status of your orders or change the email address and password you have on file with us. Please note that you **do not** need an account to use the store. The first time you place an order, you will be given the opportunity to create an account.

# Amazon.com, 1995



# Artificial Intelligence At Amazon

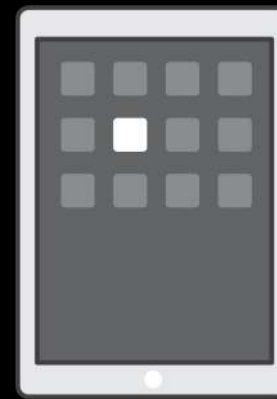
Thousands Of Employees Across The Company Focused  
on AI



Discovery  
&  
Search



Fulfilment  
&  
Logistics



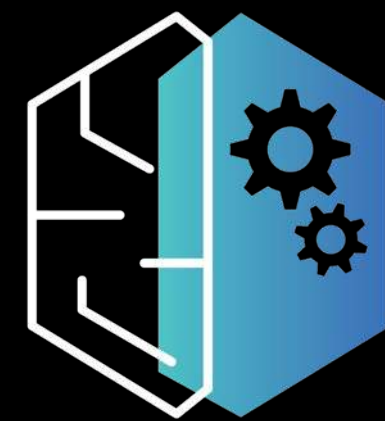
Enhance  
Existing  
Products



Define New  
Categories  
Of  
Products



Bring  
Machine  
Learning To  
All



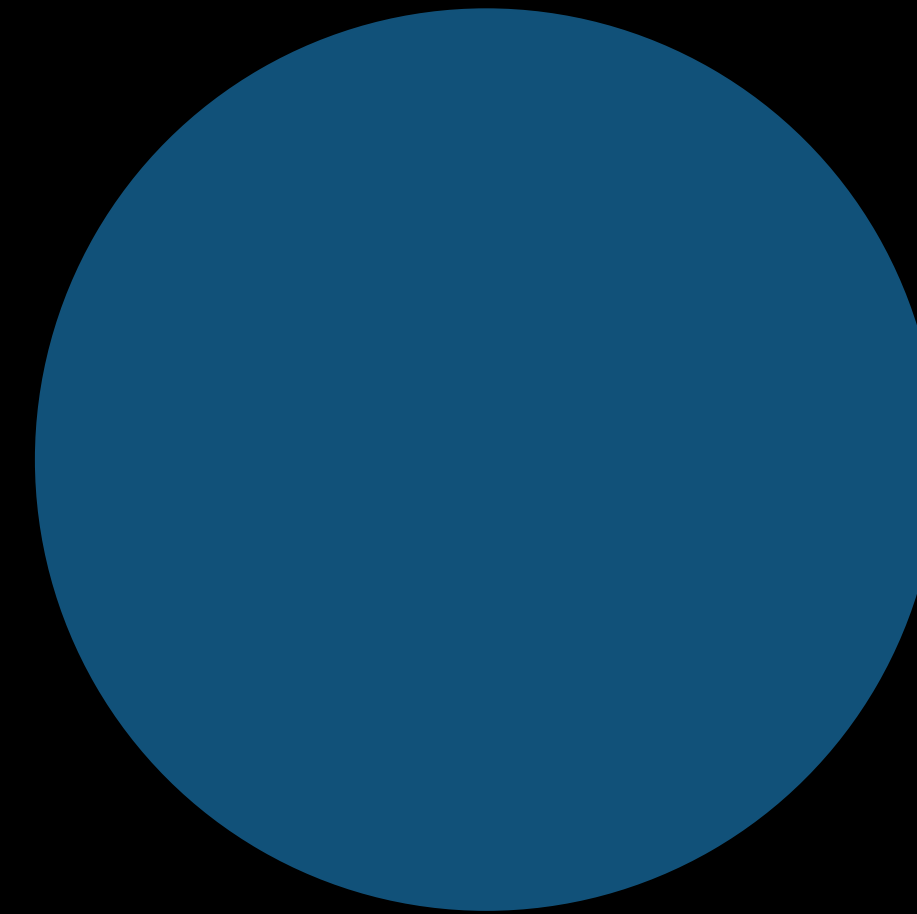
# Amazon AI

Intelligent Services Powered By Deep  
Learning

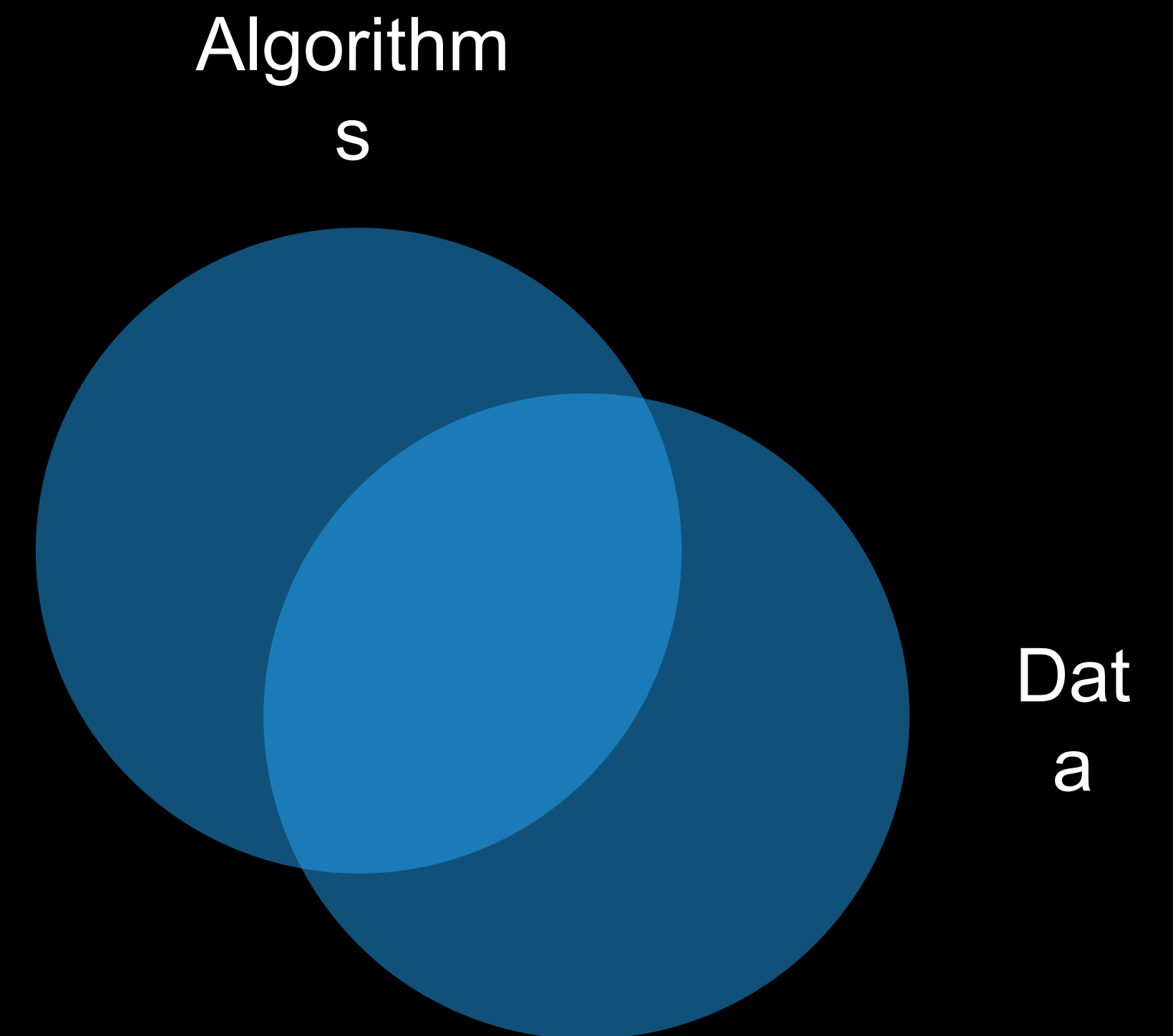
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# The Advent Of Deep Learning

Algorithm  
s

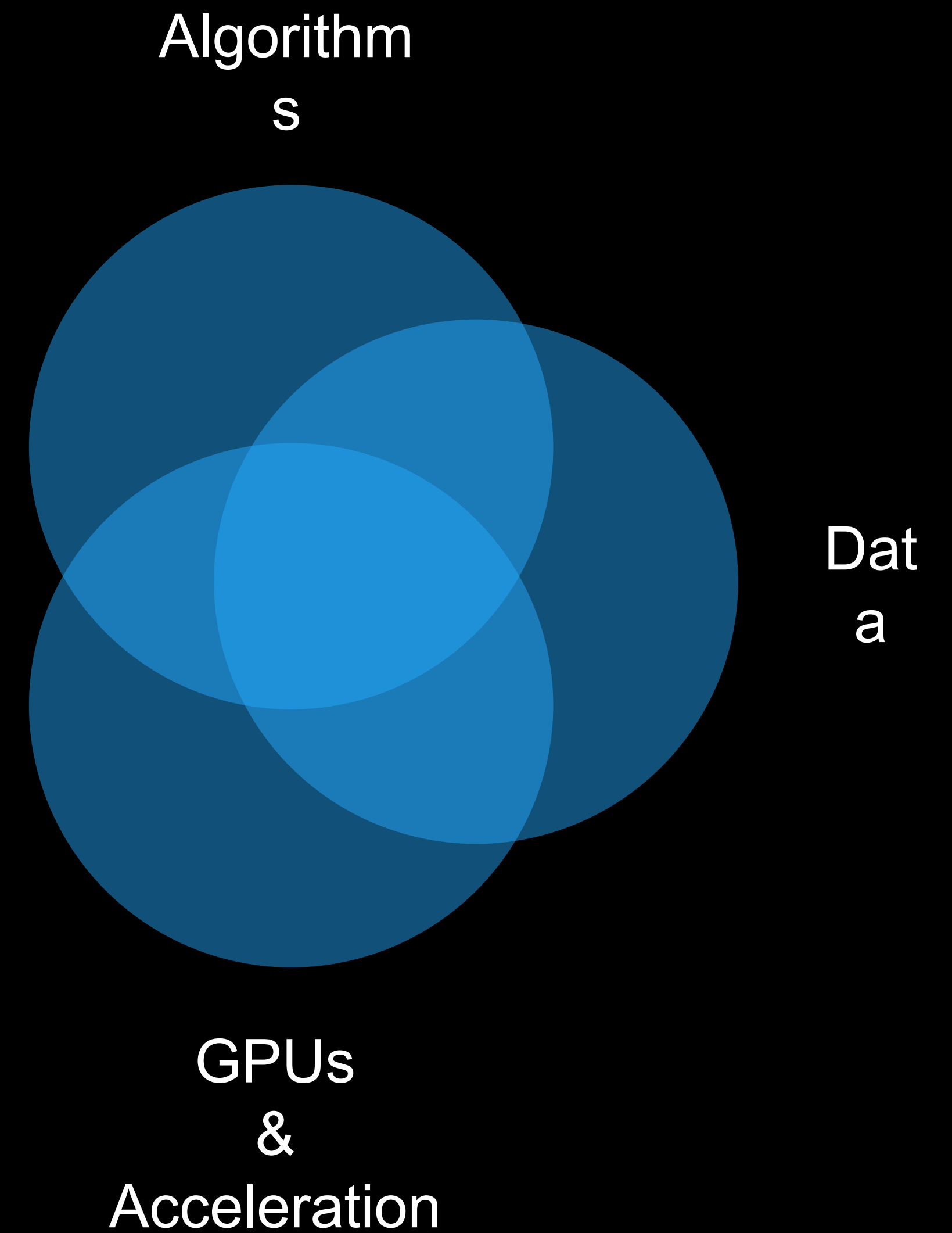


# The Advent Of Deep Learning



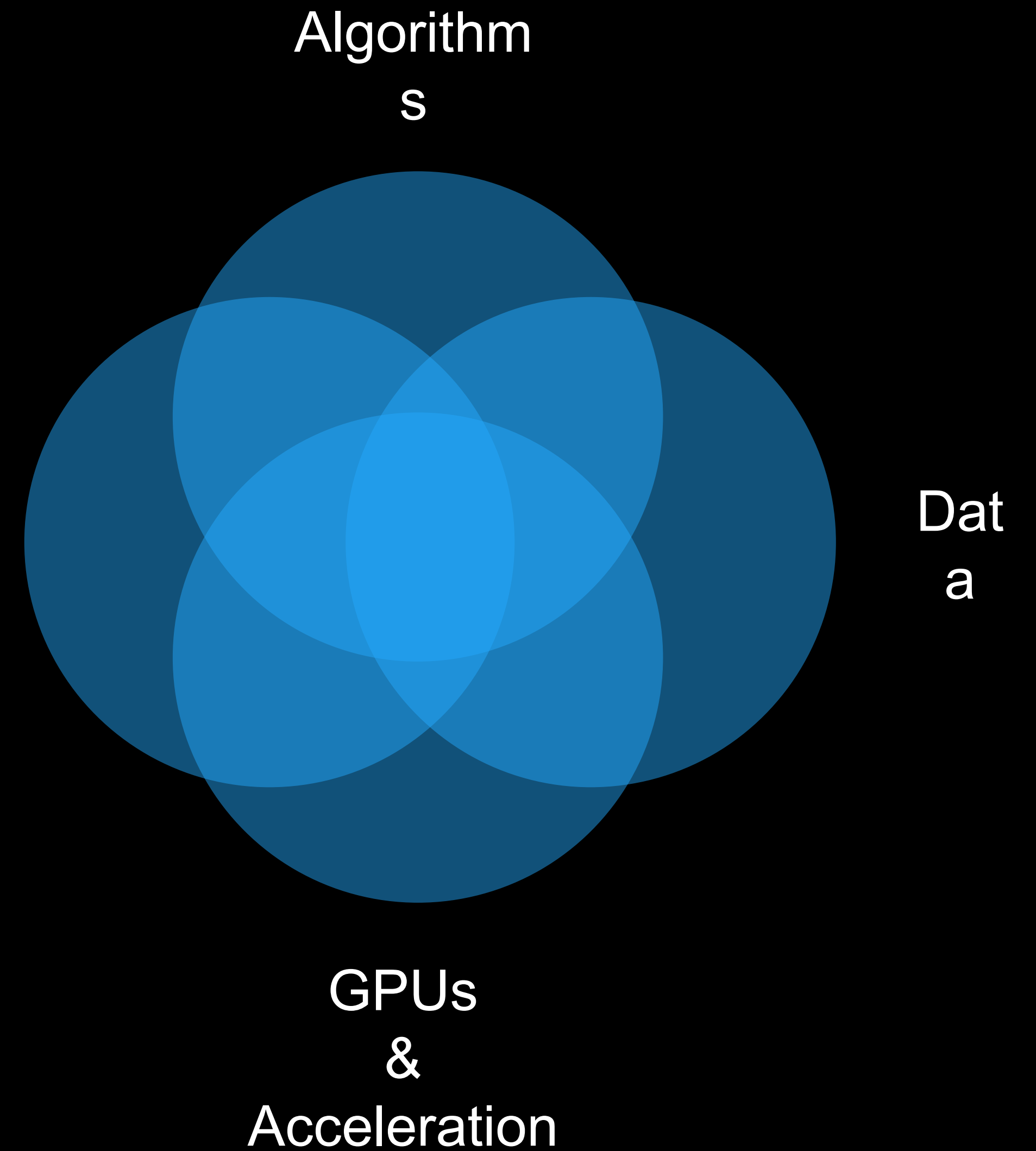


# The Advent Of Deep Learning



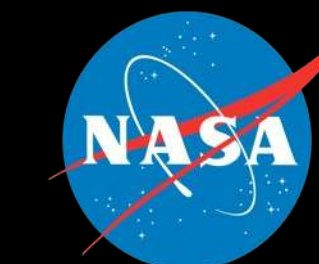
# The Advent Of Deep Learning

Programmin  
g  
models



Can We Help Customers  
Put Intelligence At The Heart Of  
Every Application & Business?

# Selected customers running AI on AWS



# Amazon AI for every developer

Services	<div><div>Chat</div><div>Amazon Lex</div></div> <div><div>Speech</div><div>Amazon Polly</div></div> <div><div>Vision</div><div>Amazon Rekognition</div></div>					
Platforms	Amazon ML	Spark & EMR	Kinesis	Batch	ECS	
Engines	MXNet	TensorFlow	Caffe	Theano	Pytorch	CNTK
Infrastructure	GPU	CPU	IoT	Mobile		

# Amazon AI: Three New Deep Learning Services

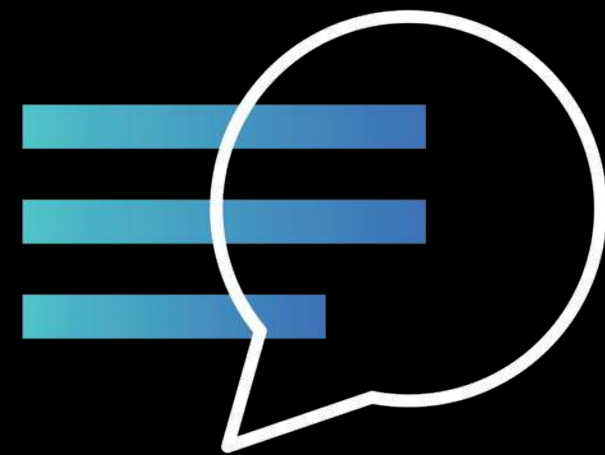


**Polly**

Life-Like  
Speech

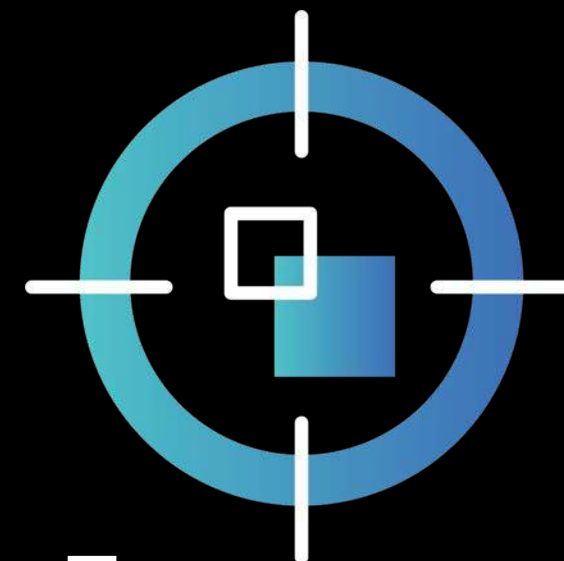


# Amazon AI: Three New Deep Learning Services



**Polly**

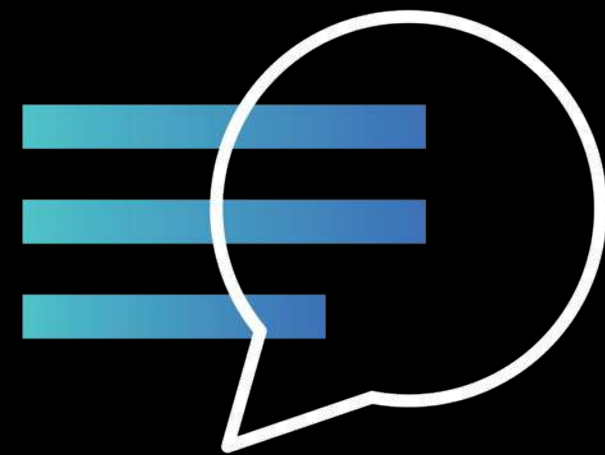
Life-Like  
Speech



**Rekognition**

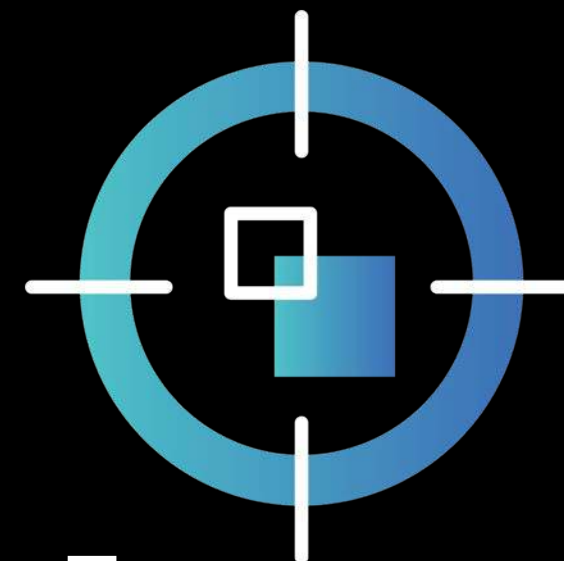
Image  
Analysis

# Amazon AI: Three New Deep Learning Services



**Polly**

Life-Like  
Speech



**Rekognition**

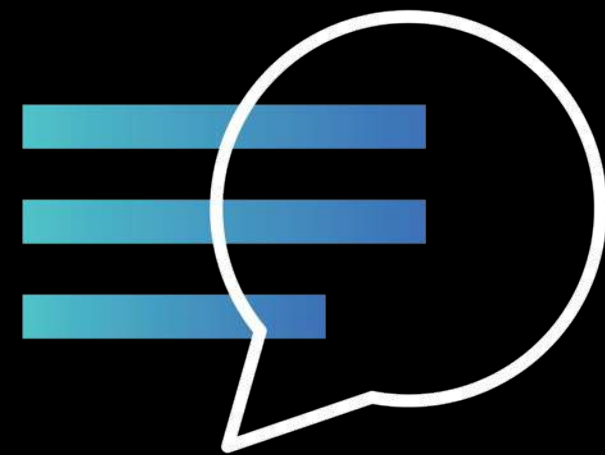
Image  
Analysis



**Lex**

Conversational  
AI  
Engine

# Amazon AI: Three New Deep Learning Services



**Polly**

Life-Like  
Speech



**Rekognition**

Image  
Analysis



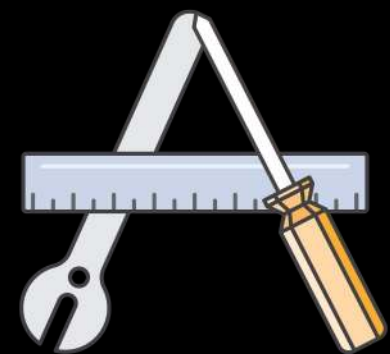
**Lex**

Conversational  
AI  
Engine

# Polly: Life-like Speech Service



Converts text  
to life-like speech



Fully  
managed



50  
voices



24  
languages



Low  
latency,  
real time

# **Polly:** A Focus On Voice Quality & Pronunciation

## **1. Automatic, Accurate Text Processing**



“Today in Seattle, WA, it’s  
11°F”



““We live for the music” live from the Madison Square  
Garden.’

# **Polly:** A Focus On Voice Quality & Pronunciation

1. Automatic, Accurate Text  
Processing



**2. Intelligible and Easy to  
Understand**



# Polly: A Focus On Voice Quality & Pronunciation

1. Automatic, Accurate Text Processing
2. Intelligible and Easy to Understand
- 3. Add Semantic Meaning to Text**



“Richard’s number is  
2122341237”



“Richard’s number is  
2122341237”

**Telephone  
Number**

# **Polly:** A Focus On Voice Quality & Pronunciation

1. Automatic, Accurate Text Processing
2. Intelligible and Easy to Understand
3. Add Semantic Meaning to Text

## **4. Customized Pronunciation**



“My daughter’s name is Kaja.”



“My daughter’s name is Kaja.”

# Polly: Life-like Speech Service



High quality,  
through  
best-in-class  
deep  
learning



Deep  
functionalit  
y



Easy to use  
& thoughtfully  
integrated



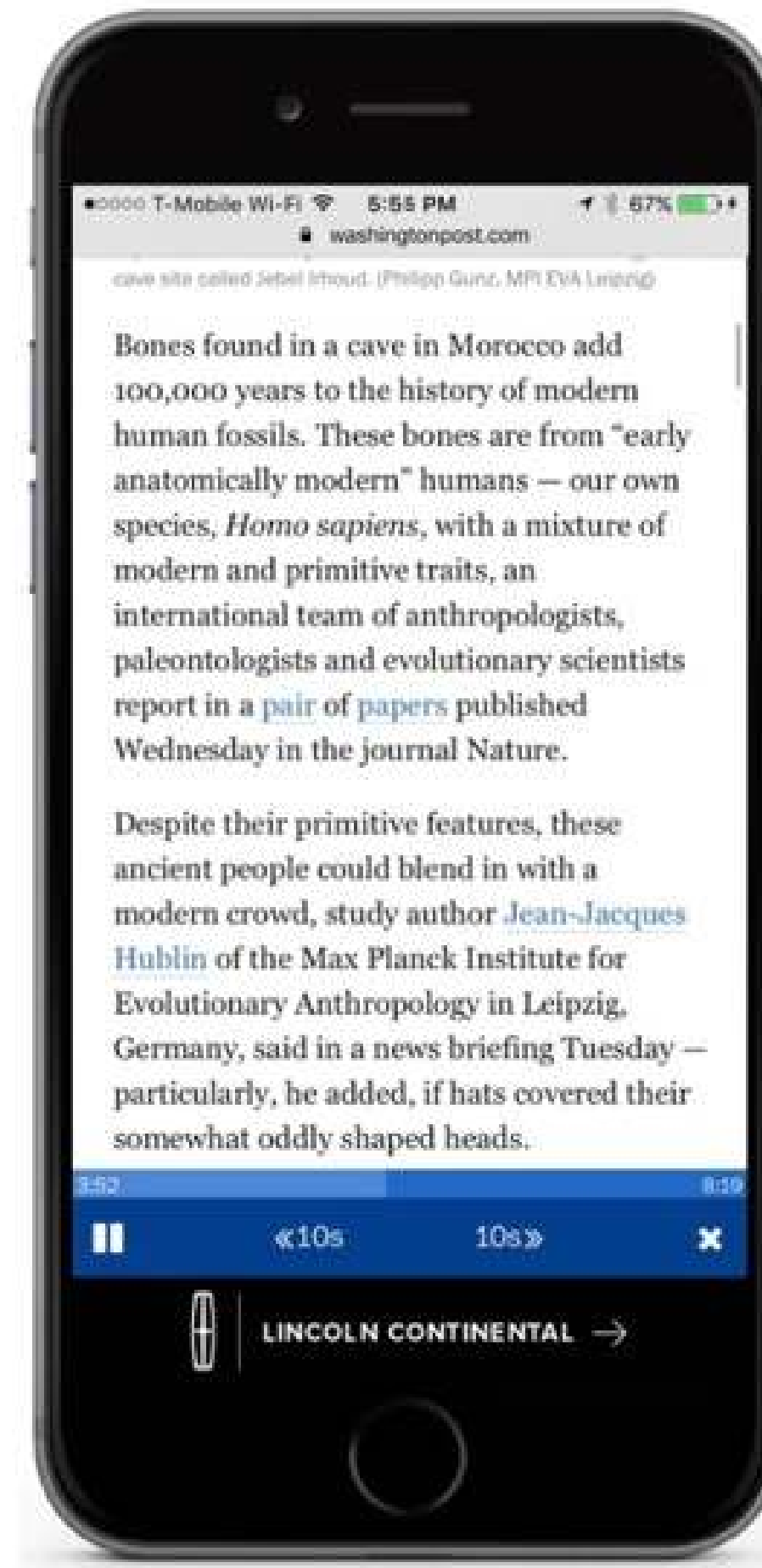
Built for  
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## The Washington Post to start experimenting with audio articles using Amazon Polly

By WashPostPR June 9

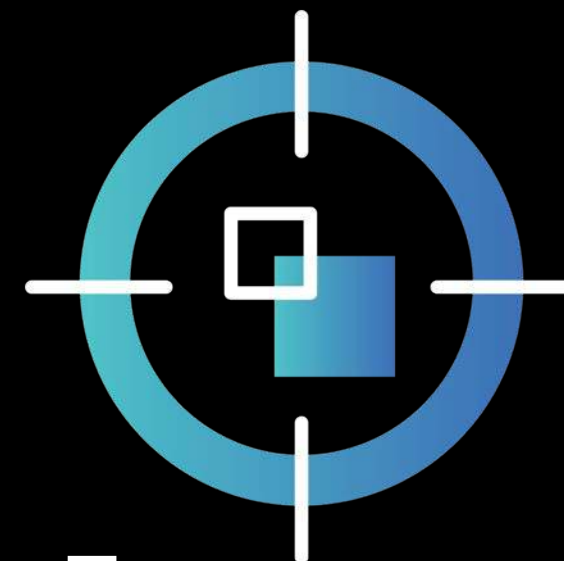


# Amazon AI: Three New Deep Learning Services



**Polly**

Life-Like  
Speech



**Rekognition**

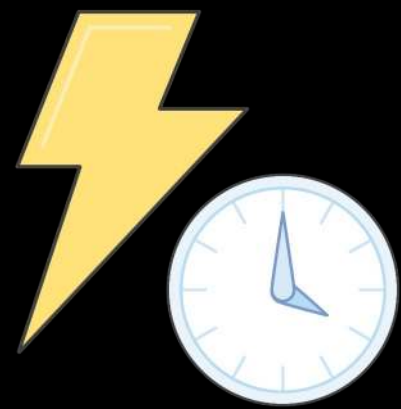
Image  
Analysis



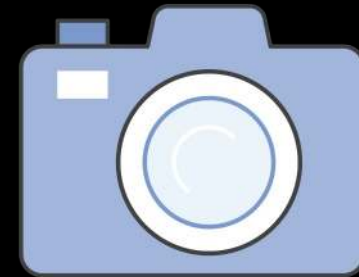
**Lex**

Conversational  
AI  
Engine

# Rekognition: Search & Understand Visual Content



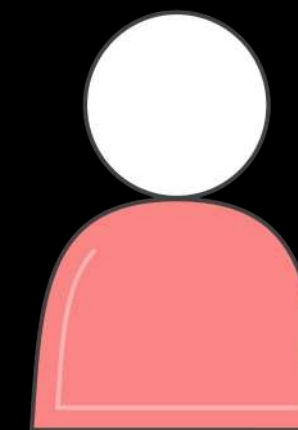
Real-time &  
batch image  
analysis



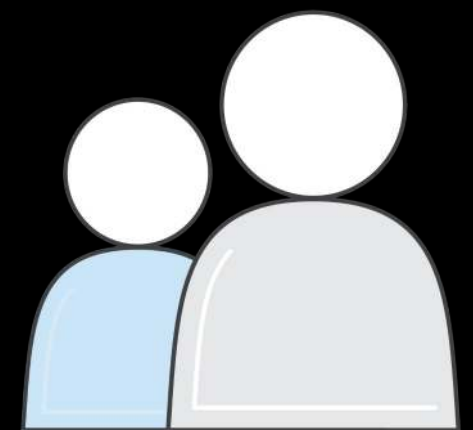
Object &  
Scene  
Detection



Facial  
Detection



Facial  
Analysis



Face  
Search

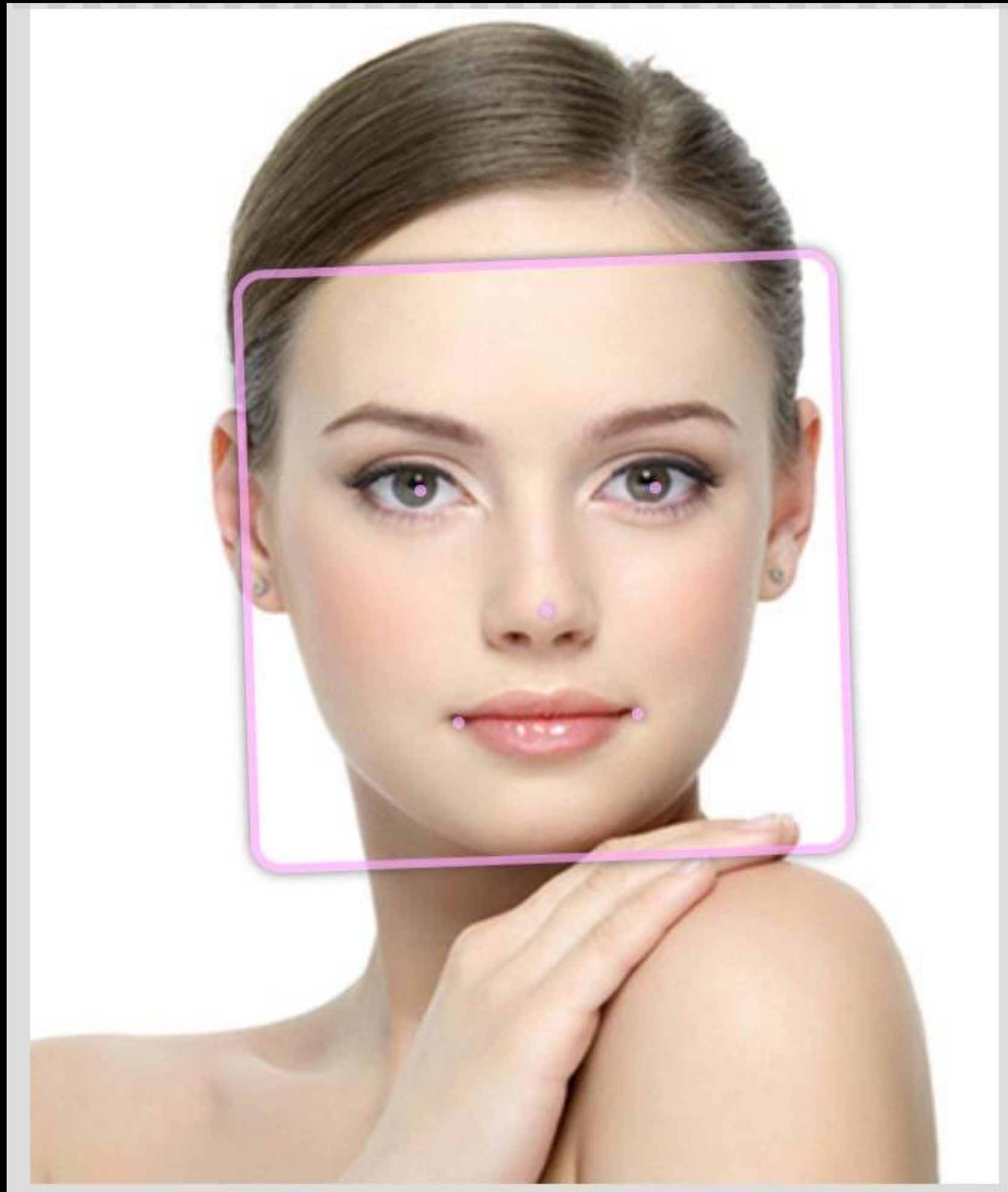


# Rekognition: Object & Scene Detection

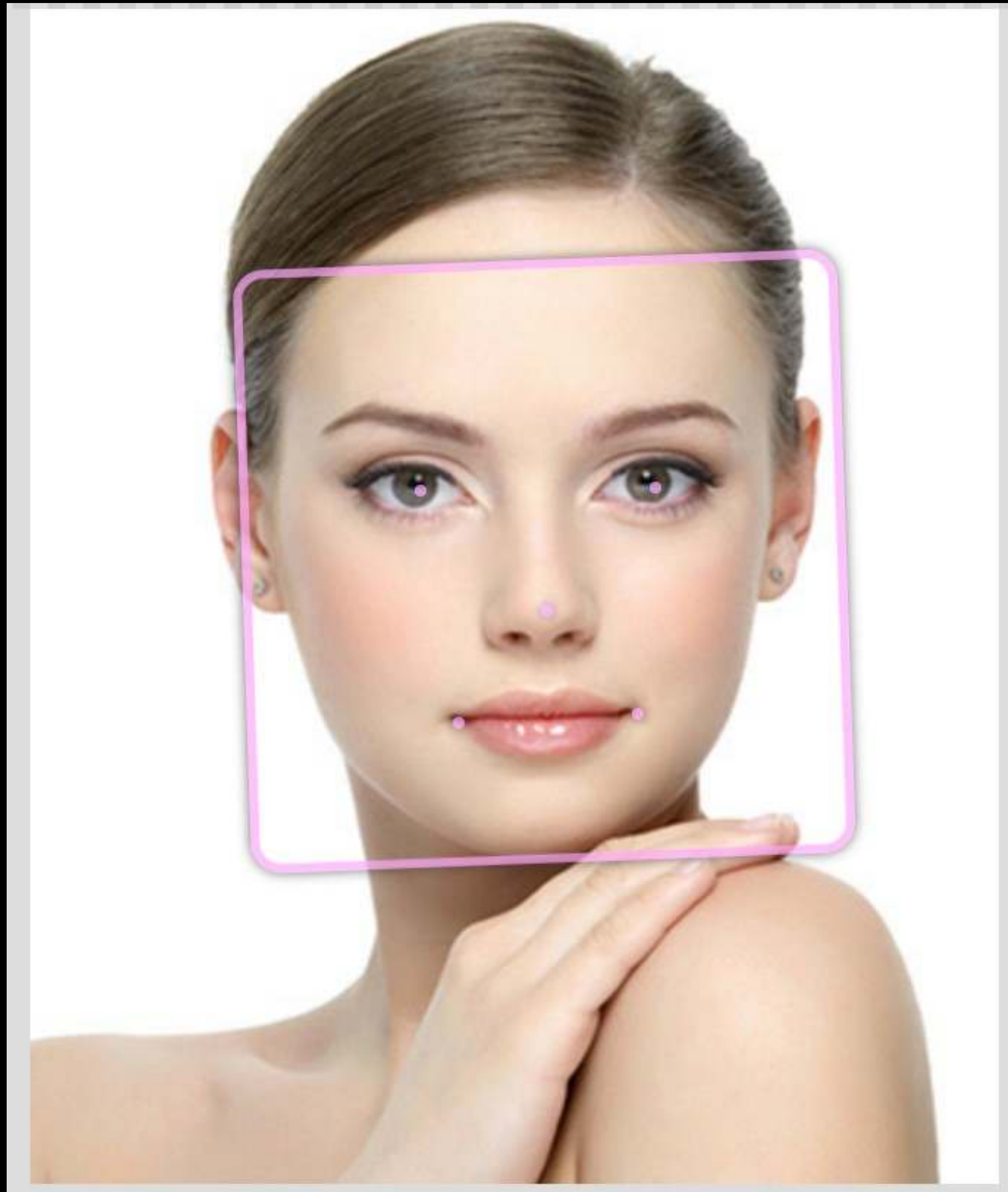


Category	Confidence
Bay	99.18%
Beach	99.18%
Coast	99.18%
Outdoors	99.18%
Sea	99.18%
Water	99.18%
Palm_tree	99.21%
Plant	99.21%
Tree	99.21%
Summer	58.3%
Landscape	51.84%
Nature	51.84%
Hotel	51.24%

# Rekognition: Facial Detection



# Rekognition: Facial Analysis



**Emotion:** calm: 73%

**Sunglasses:** false (value: 0)

**Gender:** female (value: 0)

**Mouth open wide:** 0% (value: 0)

**Eye closed:** open (value: 0)

**Glasses:** no glass (value: 0)

**Mustache:** false (value: 0)

**Beard:** no (value: 0)

# Rekognition: Compare Faces



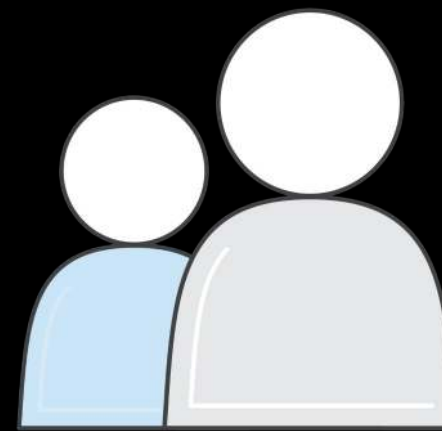
Similarity: 97.0%



# Rekognition: Facial Search



Facial  
verification  
n  
(compare two faces)



Face  
Search  
h  
(compare many faces)



Visual  
Similarity  
Search  
(find similar faces)

# Rekognition: Search & Understand Visual Content



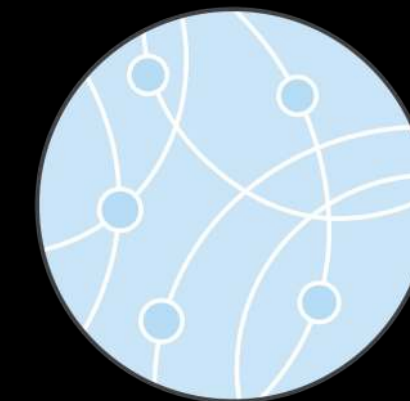
High quality,  
through  
best-in-class  
deep  
learning



Deep  
functionalit  
y



Easy to use  
& thoughtfully  
integrated



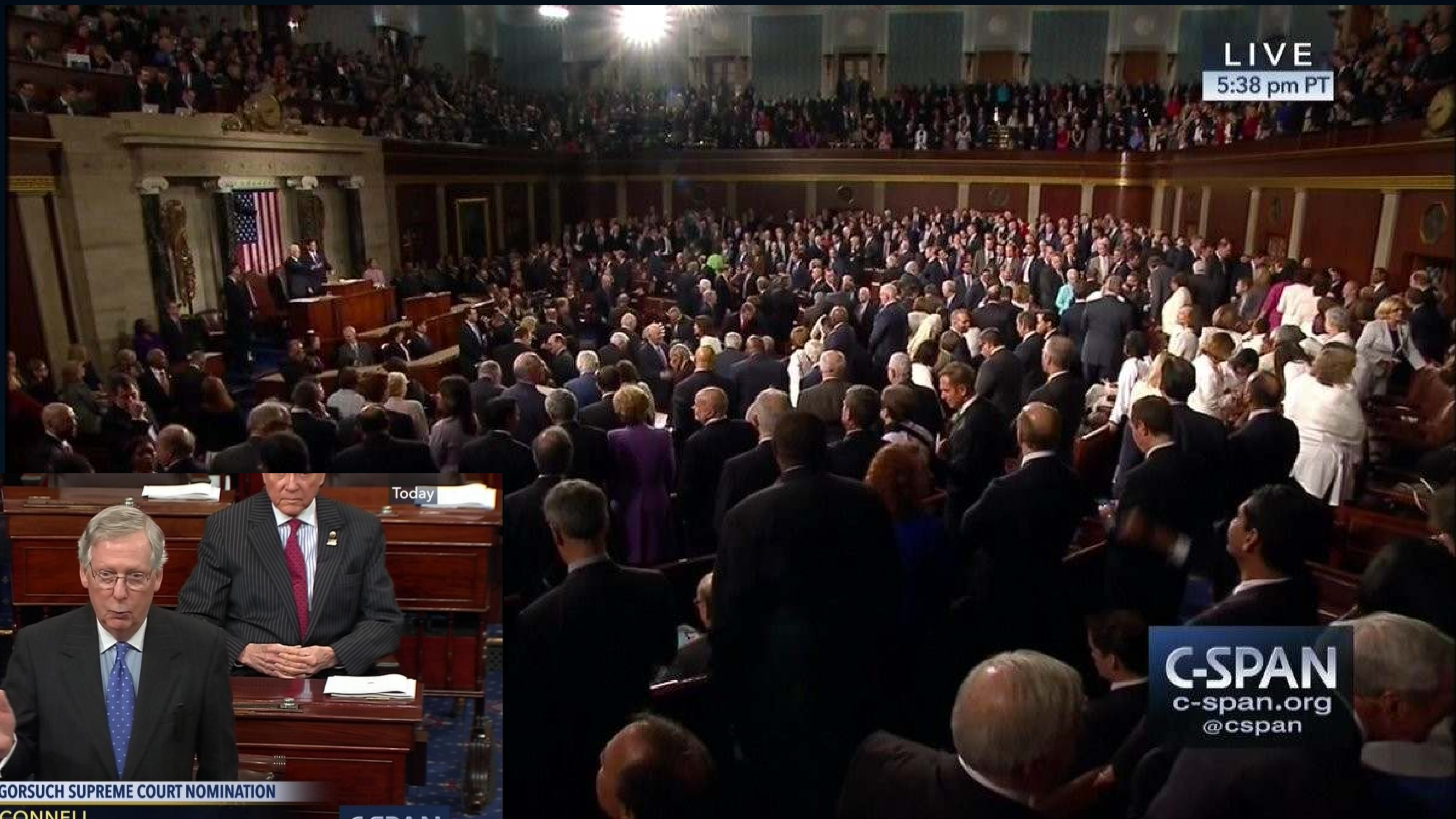
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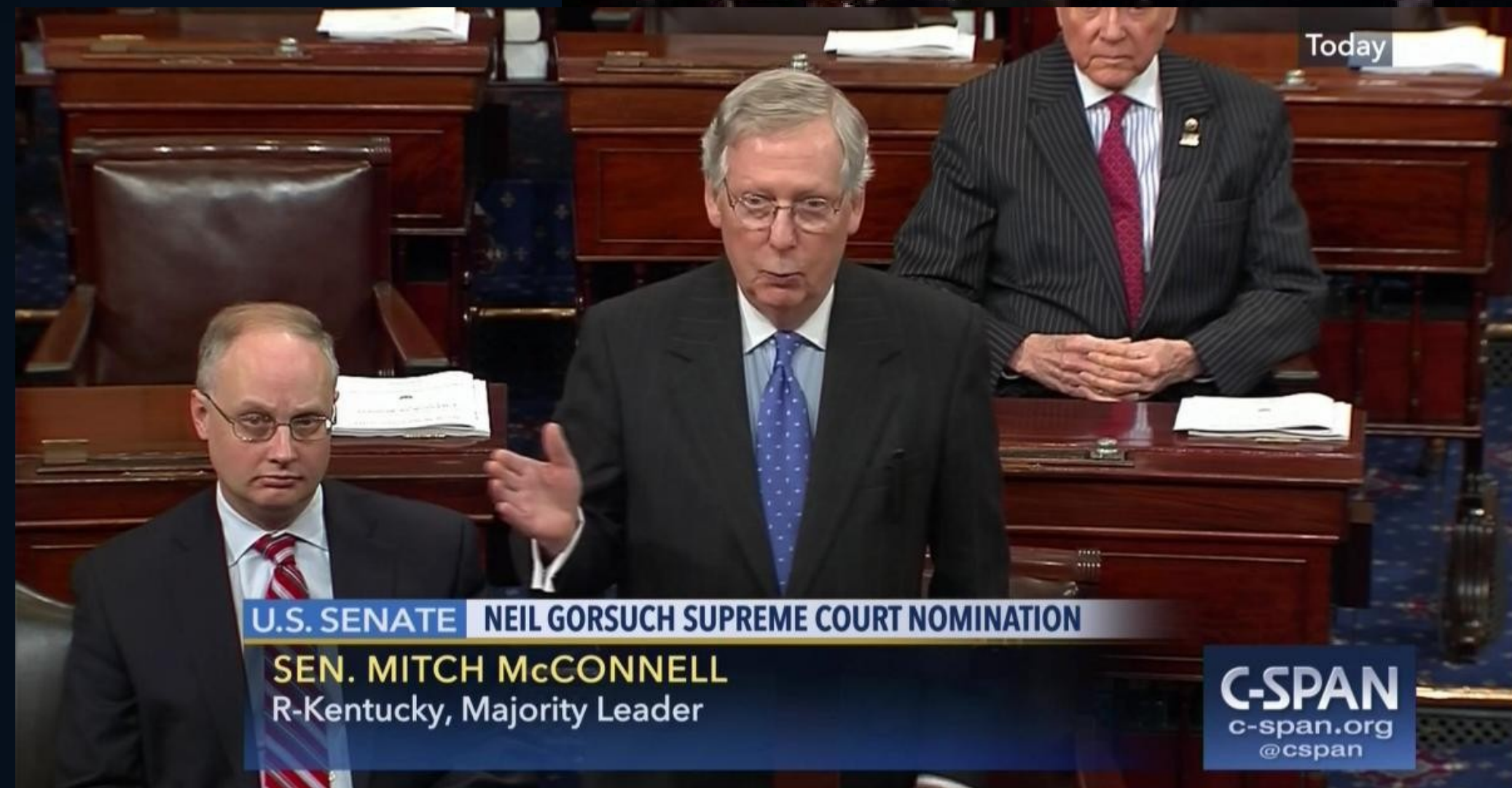


C-SPAN



LIVE  
5:38 pm PT

C-SPAN  
c-span.org  
@cspan



Today

U.S. SENATE NEIL GORSUCH SUPREME COURT NOMINATION  
SEN. MITCH McCONNELL  
R-Kentucky, Majority Leader

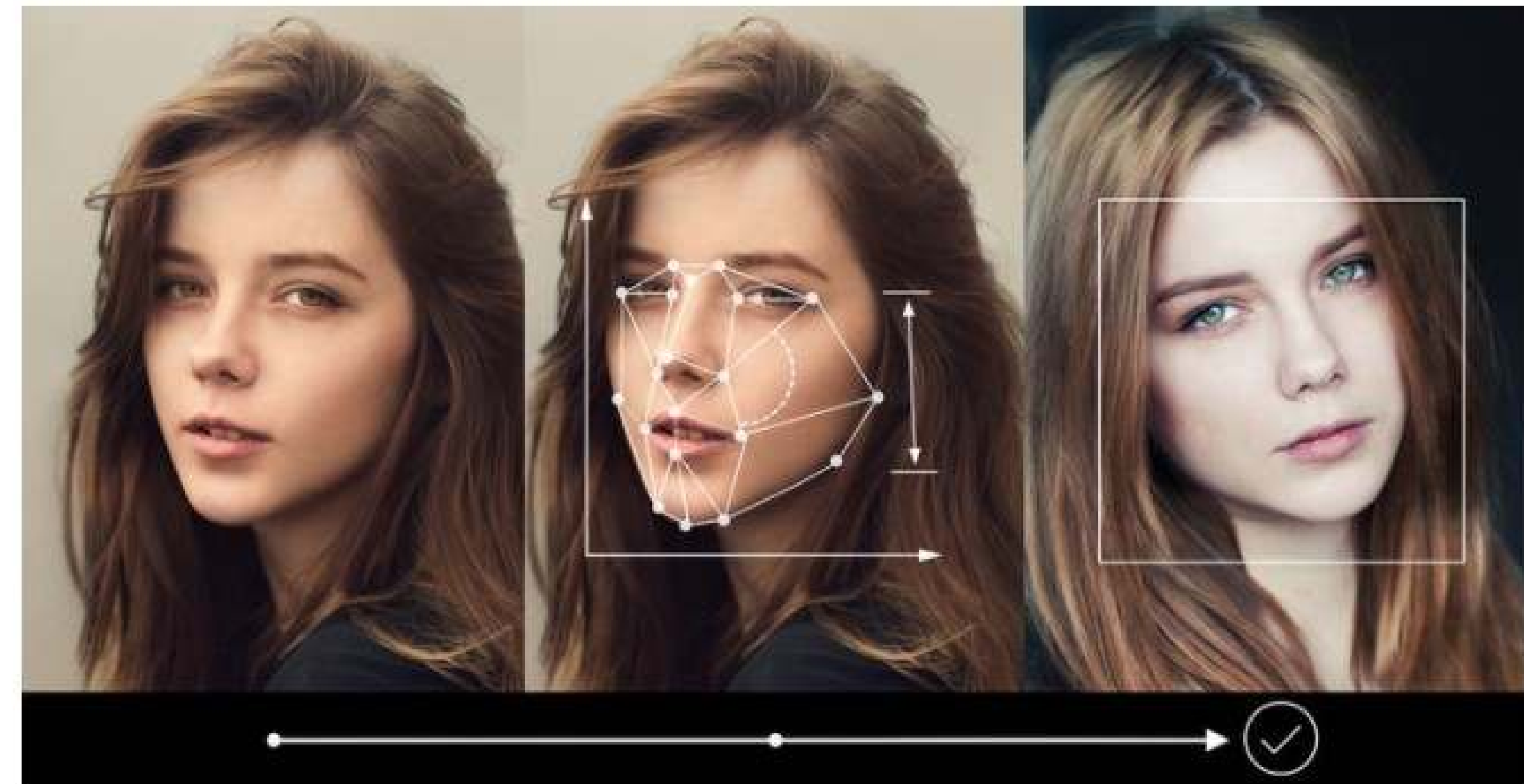
C-SPAN  
c-span.org  
@cspan



October 19, 2017

# Amazon Rekognition Helps Marinus Analytics Fight Human Trafficking

Marinus Analytics provides law enforcement with tools, founded in artificial intelligence, to turn big data into actionable intelligence. The Marinus flagship software, Traffic Jam, is a suite of tools for use by law enforcement agencies on sex trafficking investigations.





# Amazon AI: Three New Deep Learning Services



**Polly**

Life-Like  
Speech



**Rekognition**

Image  
Analysis



**Lex**

Conversational  
Engine

# Lex: Build Natural, Conversational Interactions In Voice & Text



Voice & Text  
“Chatbots”



Power  
s  
Alexa



Voice  
interactions  
on mobile, web  
& devices



Text interaction  
with Slack &  
Messenger  
(with more  
coming)



Enterprise  
Connector

S  
Salesforce  
Microsoft  
Dynamics  
Marketo  
Zendesk  
Quickbooks  
Hubspot

✈️ Flight Booking

Origin

Destination

Departure Date



“Book a flight to  
London”

✈ Flight Booking	
Origin	
Destination	
Departure Date	



“Book a flight to  
London”

Automatic  
Speech Recognition

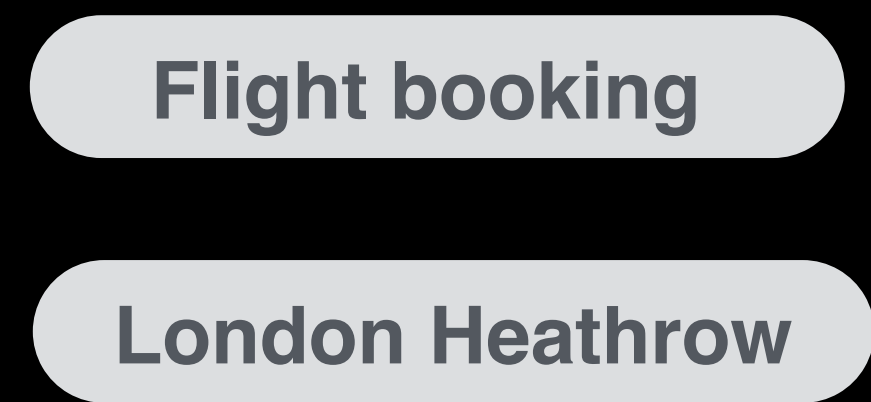
✈️ Flight Booking	
Origin	
Destination	
Departure Date	



“Book a flight to  
London”



Automatic  
Speech Recognition



Natural Language  
Understanding



Knowledge  
Graph



Grammar  
Graph



Utterances

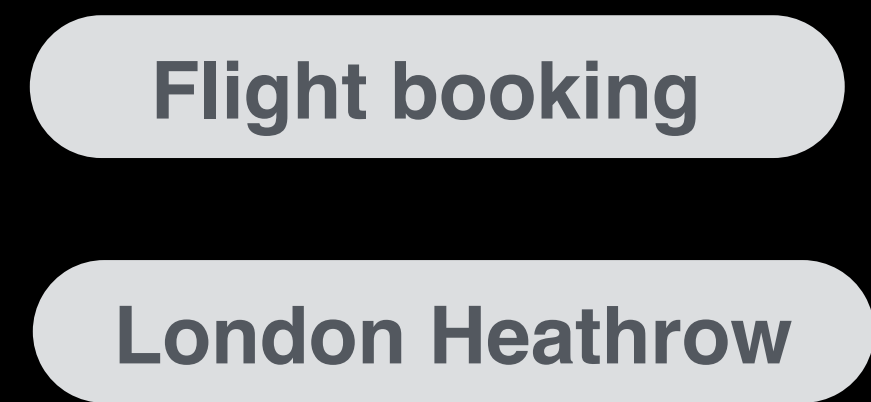
✈️ Flight Booking	
Origin	
Destination	
Departure Date	



“Book a flight to  
London”



Automatic  
Speech Recognition



Natural Language  
Understanding



Knowledge  
Graph



Grammar  
Graph

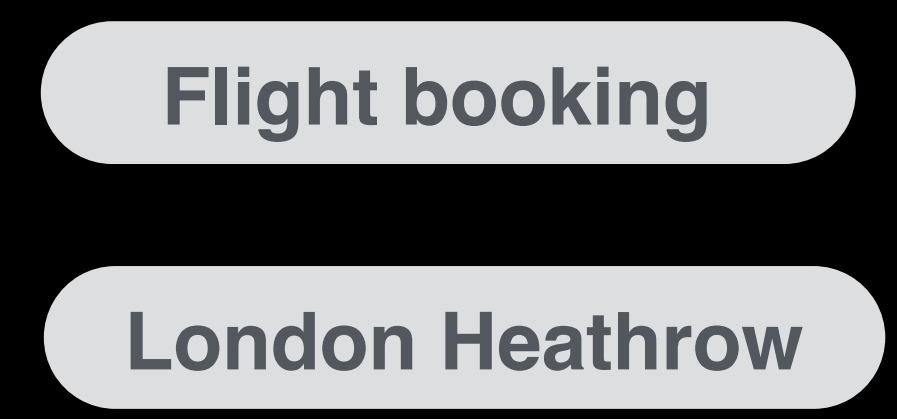
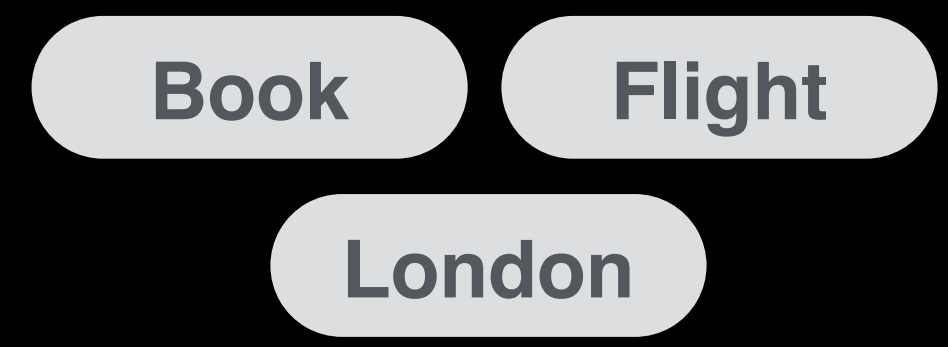


Utterances



✈️ Flight Booking	
Origin	
Destination	London Heathrow
Departure Date	





Knowledge  
Graph

“Book a flight to  
London”

Automatic  
Speech Recognition

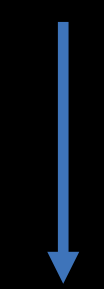
Natural Language  
Understanding



Grammar  
Graph

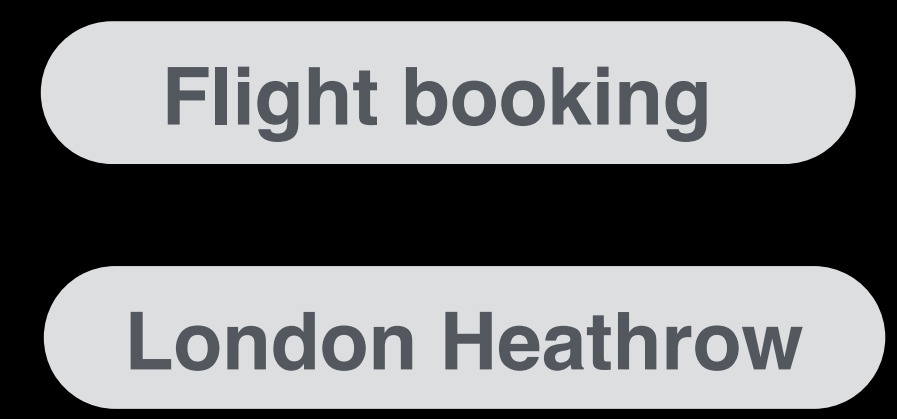
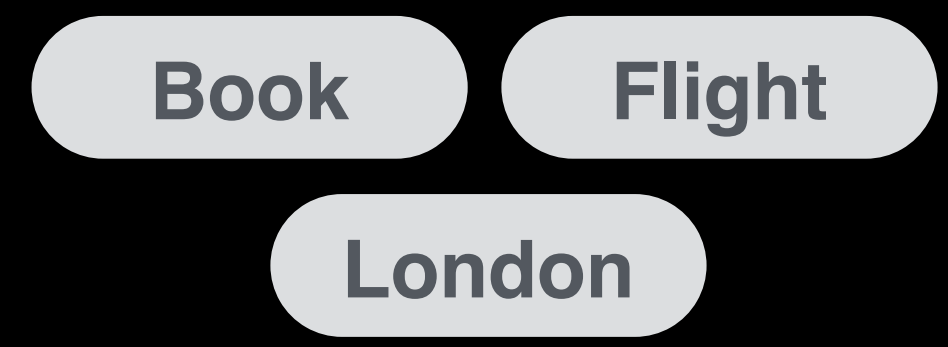
Location

Location



Utterances  
↑

✈️ Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	



**Knowledge  
Graph**



**Grammar  
Graph**



**Utterances**

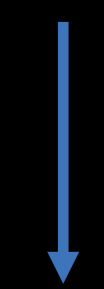
**“Book a flight to  
London”**

**Automatic  
Speech Recognition**

**Natural Language  
Understanding**

**Location**

**Location**

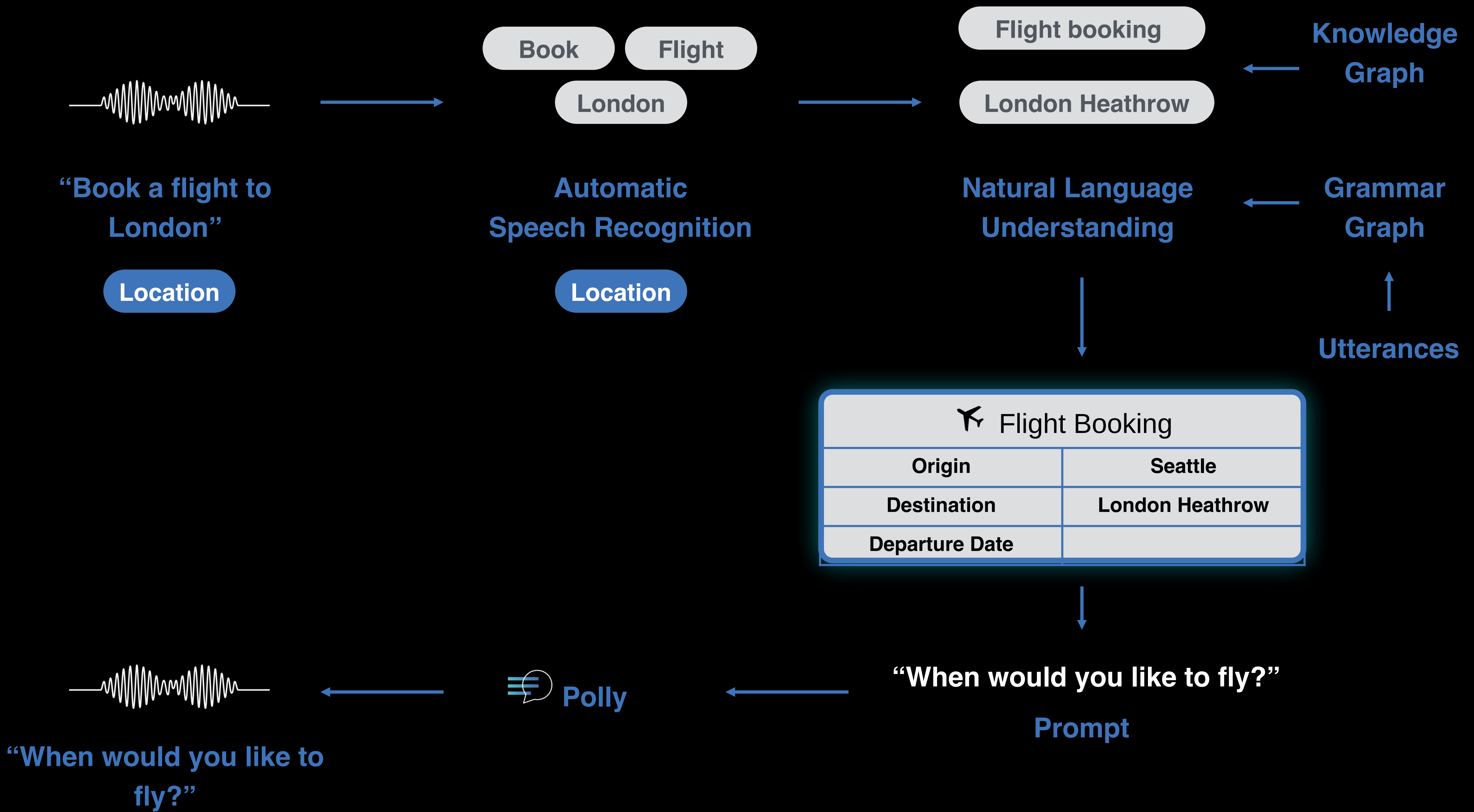


✈️ Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	



**“When would you like to fly?”**

**Prompt**





“Next Friday”



“When would you like to  
fly?”

✈️ Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	



Next

Friday

“Next Friday”

## Automatic Speech Recognition

✈ Flight Booking

Origin

Seattle

Destination

London Heathrow

Departure Date



“Next Friday”



Next

Friday

Automatic  
Speech Recognition



Flight booking

11/18/2016

Natural Language  
Understanding



✈️ Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	11/18/2016



Knowledge  
Graph



Grammar  
Graph



Utterances



“Next Friday”



Next

Friday

Automatic  
Speech Recognition



Flight booking

11/18/2016

Natural Language  
Understanding



✈️ Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	11/18/2016



$\lambda$



Knowledge  
Graph

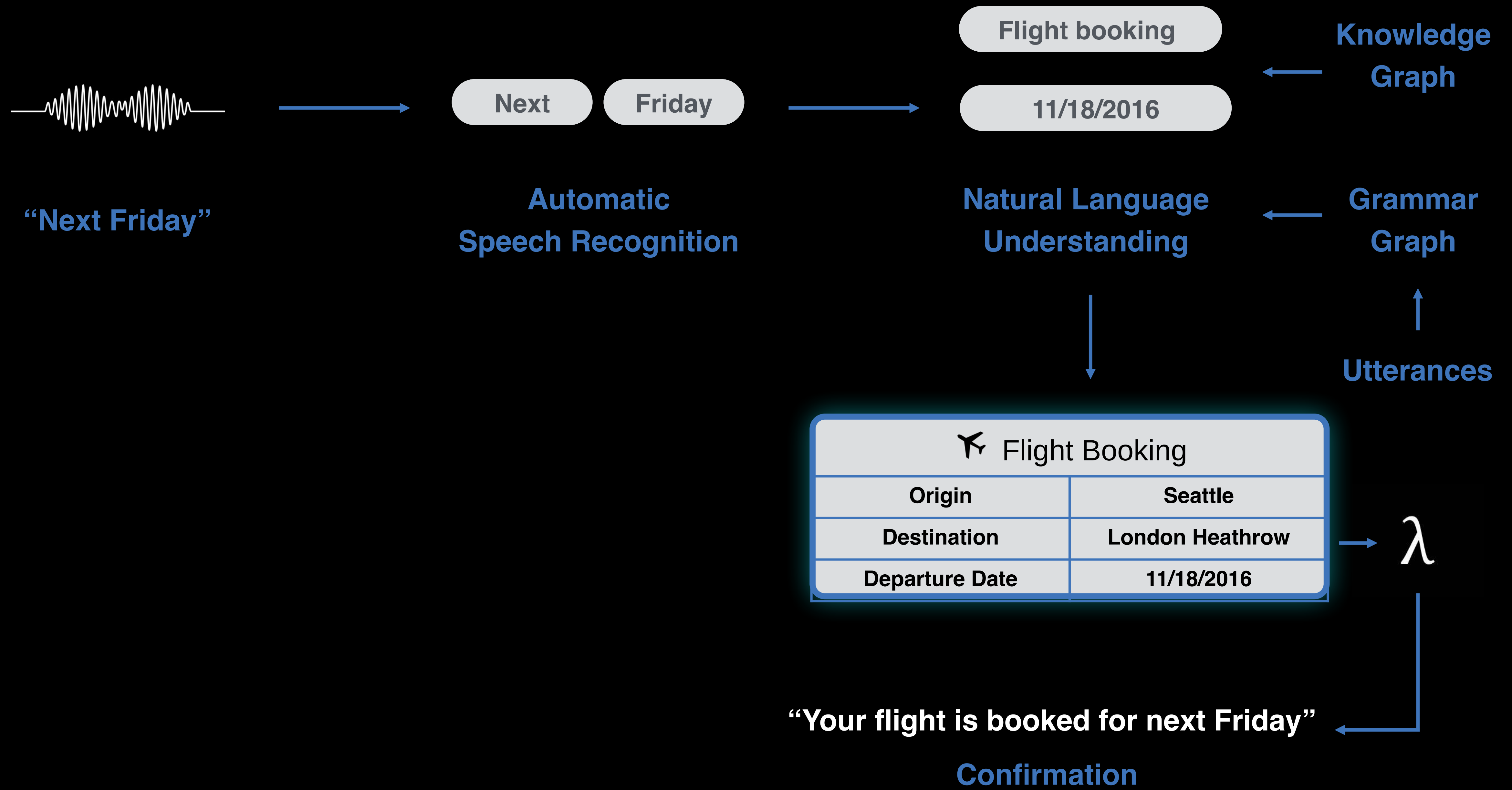


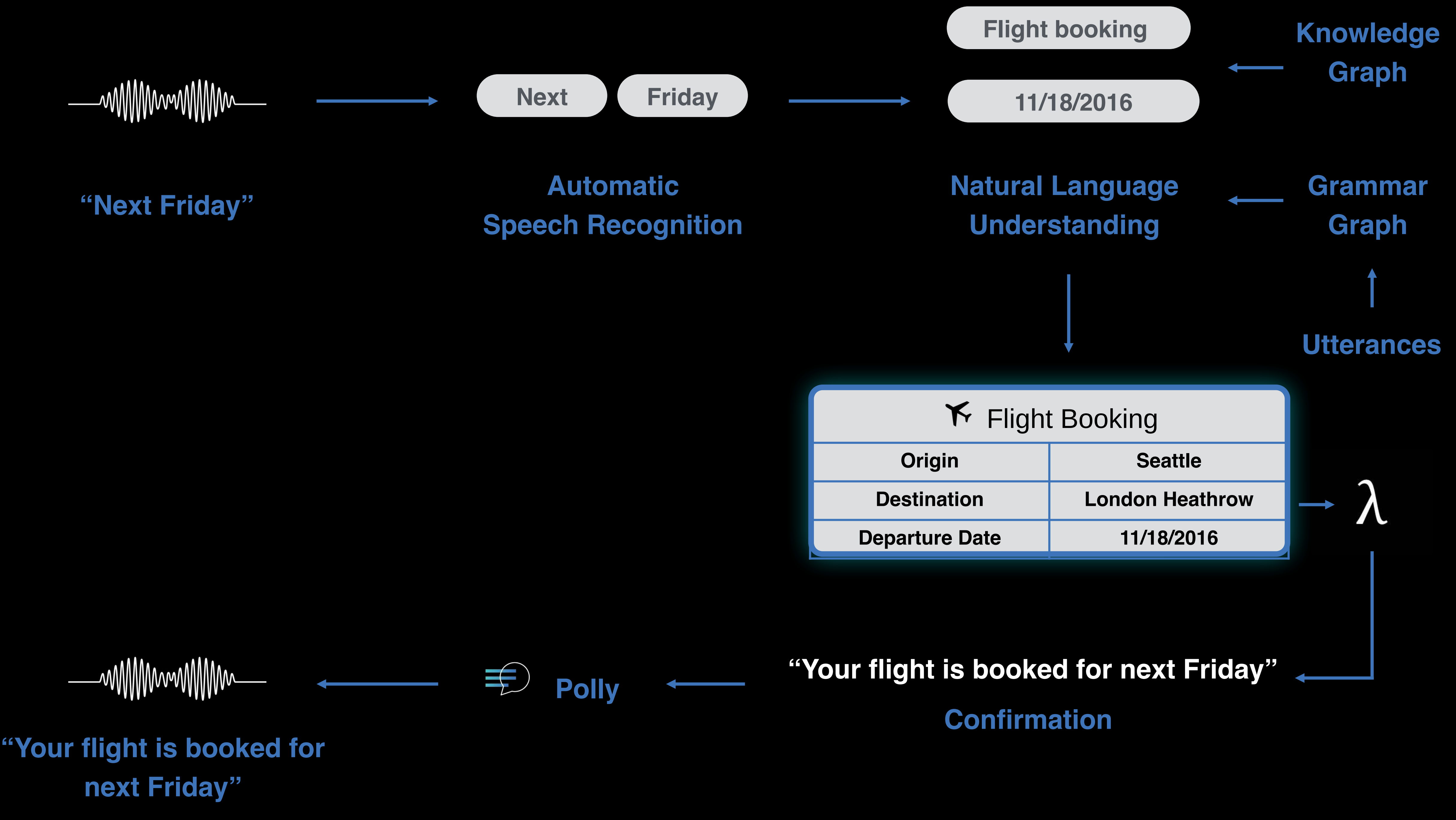
Grammar  
Graph



Utterances









“Next Friday”



Next Friday

Automatic  
Speech Recognition



Flight booking  
11/18/2016

Natural Language  
Understanding



Knowledge  
Graph



Grammar  
Graph



✈️ Flight Booking	
Origin	Seattle
Destination	London Heathrow
Departure Date	11/18/2016

Utterances  
↑

→  $\lambda$

🏠 Hotel Booking



# Lex: Build Natural, Conversational Interactions In Voice & Text



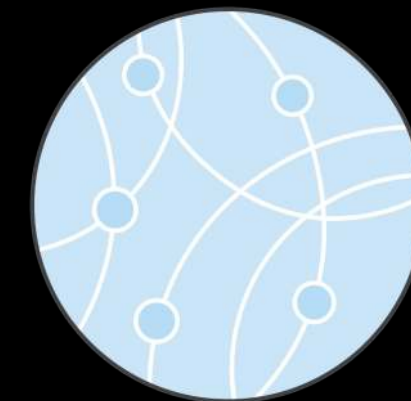
High quality,  
through  
best-in-class  
deep  
learning



Deep  
functionalit  
y



Easy to use  
& thoughtfully  
integrated



Built for  
productio  
n



Lo  
w  
cos  
t

# “Alexa...

...tell Insurance Advisor I'd like  
to find an agent in my area.”

...ask Insurance Advisor what total  
vehicle loss is.”

...ask Insurance Advisor what types  
of insurance Safeco offers.”



A photograph of the interior of a BMW car, showing the steering wheel with the BMW logo, the dashboard with a digital display, and the center console. The text "As soon as 2018, Alexa will be your companion in BMWs" is overlaid on the image.

As soon as 2018, Alexa will be your companion in  
BMWs



# Amazon AI for every developer

Services	<div>Chat</div> <div>Amazon Lex</div>	<div>Speech</div> <div>Amazon Polly</div>	<div>Vision</div> <div>Amazon Rekognition</div>			
Platforms	Amazon ML	Spark & EMR	Kinesis	Batch	ECS	
Engines	MXNet	TensorFlow	Caffe	Theano	Pytorch	CNTK
Infrastructure	GPU	CPU	IoT	Mobile		



# Jeff Bezos' letter to Amazon shareholders

*“We are solving problems with machine learning and artificial intelligence that were in the realm of science fiction for the last several decades. Natural language understanding, machine vision problems, it really is an amazing renaissance.”*

<https://www.geekwire.com/2017/jeff-bezos-explains-amazons-artificial-intelligence-machine-learning-strategy/>

APR 18, 2017 @ 11:26 AM

## The Great AI Recruitment War: Amazon Is On Top, And Apple Is Almost Nowhere To Be Seen

[https://www.forbes.com/sites/aarontilley/2017/04/18/the-great-ai-recruitment-war-amazon-is-on-top-and-apple-is-almost-nowhere-to-be-seen](https://www.forbes.com/sites/aarontilley/2017/04/18/the-great-ai-recruitment-war-amazon-is-on-top-and-apple-is-almost-nowhere-to-be-seen/)



# Thank you!

Julien Simon

AI Evangelist, EMEA

@julsimon

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