



AWS Machine Learning Language Services

Julien Simon

Principal Technical Evangelist, AI and Machine Learning

@julsimon

A Long History of ML at Amazon



Personalized
recommendations



Fulfillment
automation and
inventory
management



Drones



Voice driven
interactions



Inventing entirely
new customer
experiences

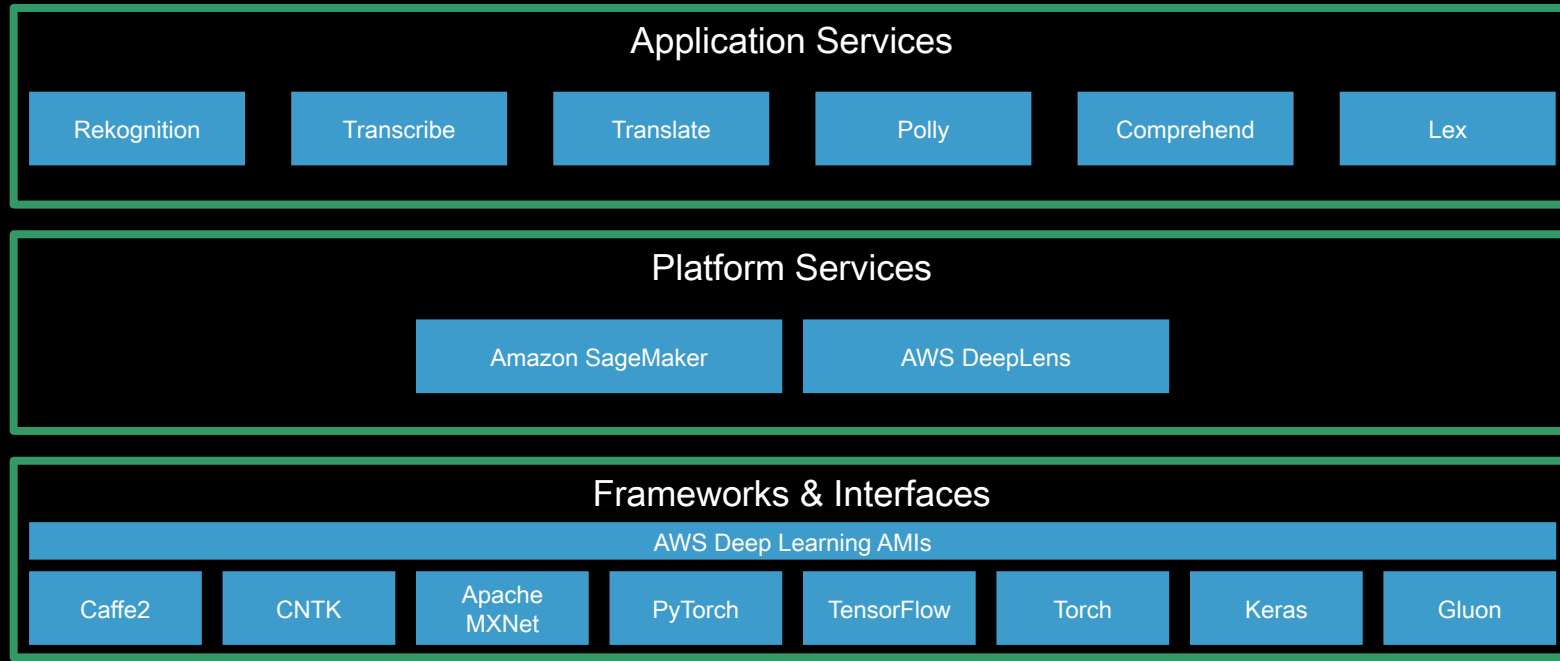
Our mission

Put Machine Learning in the hands of every developer

Customers running ML on AWS today



The Amazon ML Stack



Powerful language capabilities

Amazon Transcribe

Automatic conversion of speech into accurate, grammatically correct text

Amazon Translate

Natural and fluent language translation

Amazon Polly

Turn text into lifelike speech using deep learning

Amazon Comprehend

Discover insights and relationships in text

Amazon Lex

Conversational interfaces for text-based and voice-based applications

Benefits of ML Language Services

- **Easily add intelligence to apps**
with pre-trained APIs for speech, transcription, translation, language analysis, and chatbot functionality
- **Connect to comprehensive analytics**
including data warehousing, business intelligence, batch processing, stream processing, and workflow orchestration
- **Integrate with the most complete big data platform**
including the data lake and database tools to run machine learning workloads

Common Language Use Cases



**Voice of Customer
Applications**



Knowledge Management



Education



**Customer Service/
Call Centers**



Semantic Search



Accessibility



**Enterprise
Digital Assistant**



Captioning Workflows



Information Bots



Personalization



Localization

Amazon Polly

Amazon Polly

Turn text into lifelike speech using deep learning



Wide selection of
voices and languages



Synchronize
speech



Fine-grained
control



Unlimited replay

FREE TIER

A Focus On Voice Quality & Pronunciation

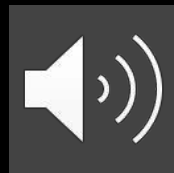
Support for Speech Synthesis Markup Language (SSML) Version 1.0

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

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

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

```
</speaking>
```



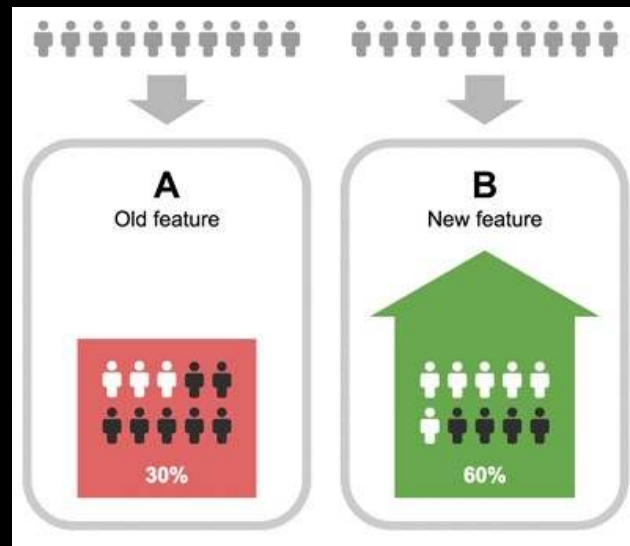
Duolingo



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/>

Amazon Translate

Amazon Translate

Natural and fluent language translation



Real-time
translation



Batch analysis



Automatic language
recognition



Low cost

FREE TIER

Languages

Available now

English to/from:

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

Coming soon

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

Machine Translation

« 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** »

Matt Fryer, VP and Chief Data Science Officer, Hotels.com

Amazon Transcribe

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

FREE TIER

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 sales 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

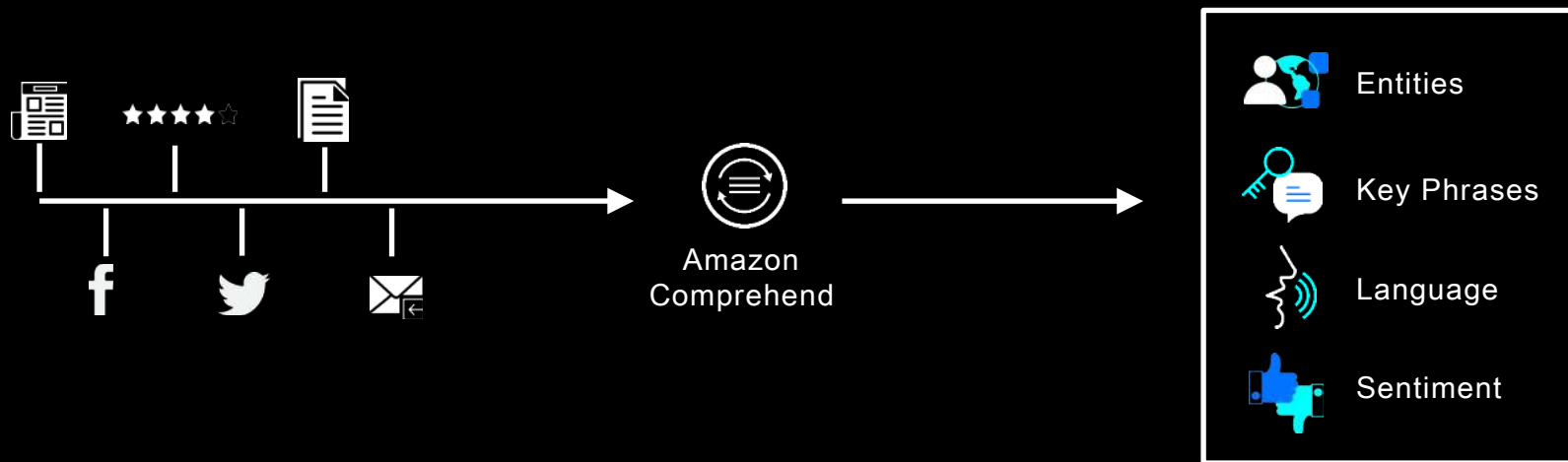


https://www.youtube.com/watch?v=1ZJ_f1bDdog

Amazon Comprehend

Amazon Comprehend

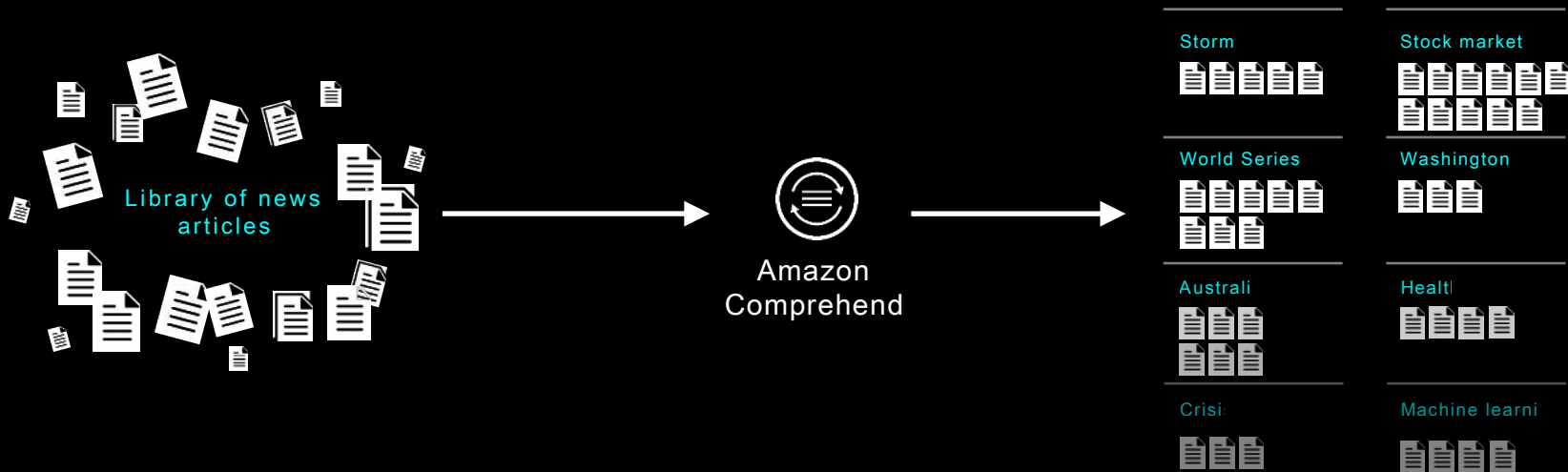
Discover insights and relationships in text using deep learning



FREE TIER

Amazon Comprehend

Discover insights and relationships in text using deep learning



ClearView Social



**CLEAR
VIEW
SOCIAL**

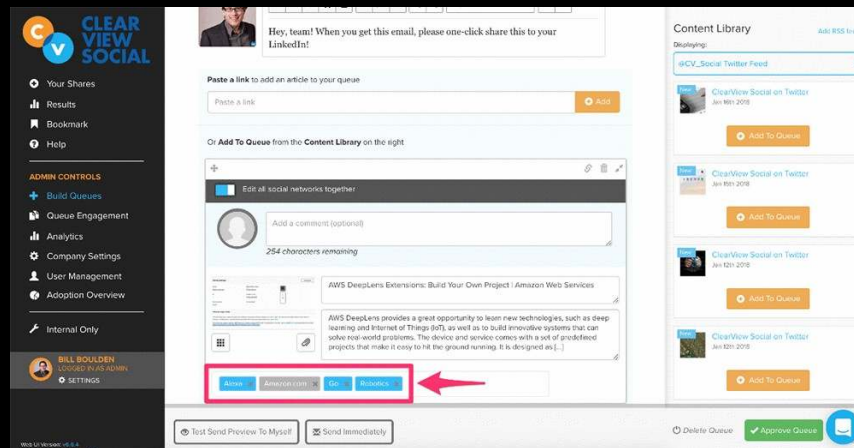
ClearView Social enables a company's employees to share approved content on LinkedIn, Twitter, and other social networks.

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

Natural Language Processing

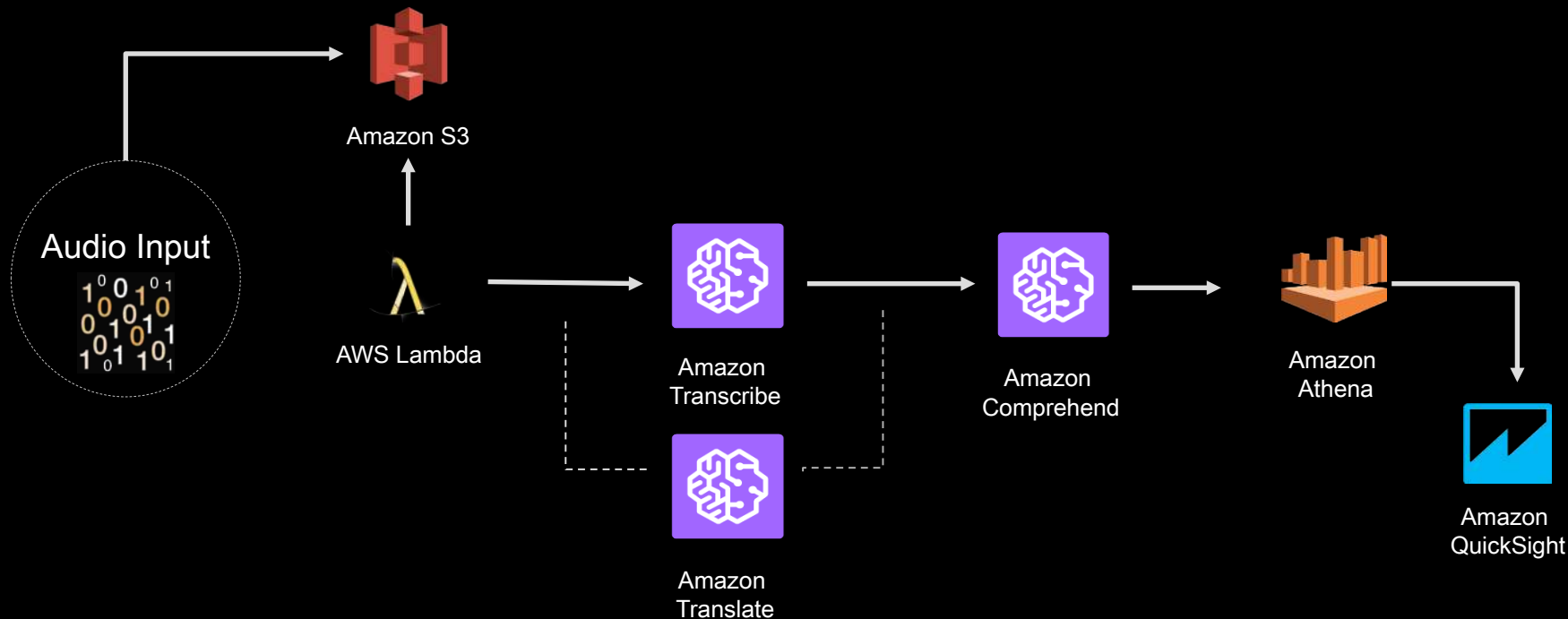
*"We use **Amazon Comprehend** to read an article and extract topics, which are automatically tagged using machine learning. This automatic tagging helps customers easily estimate the market value of their engagement according to the current bid prices from the Google AdWords API"*

Bill Boulden, CTO, ClearView Social



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

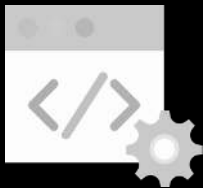
Integrating Speech, Translation and NLP



Amazon Lex

Amazon Lex

Building conversational interfaces into any application using voice and text



Integrated
development in the
AWS console



Trigger
Lambda
functions



Multi-step
conversations



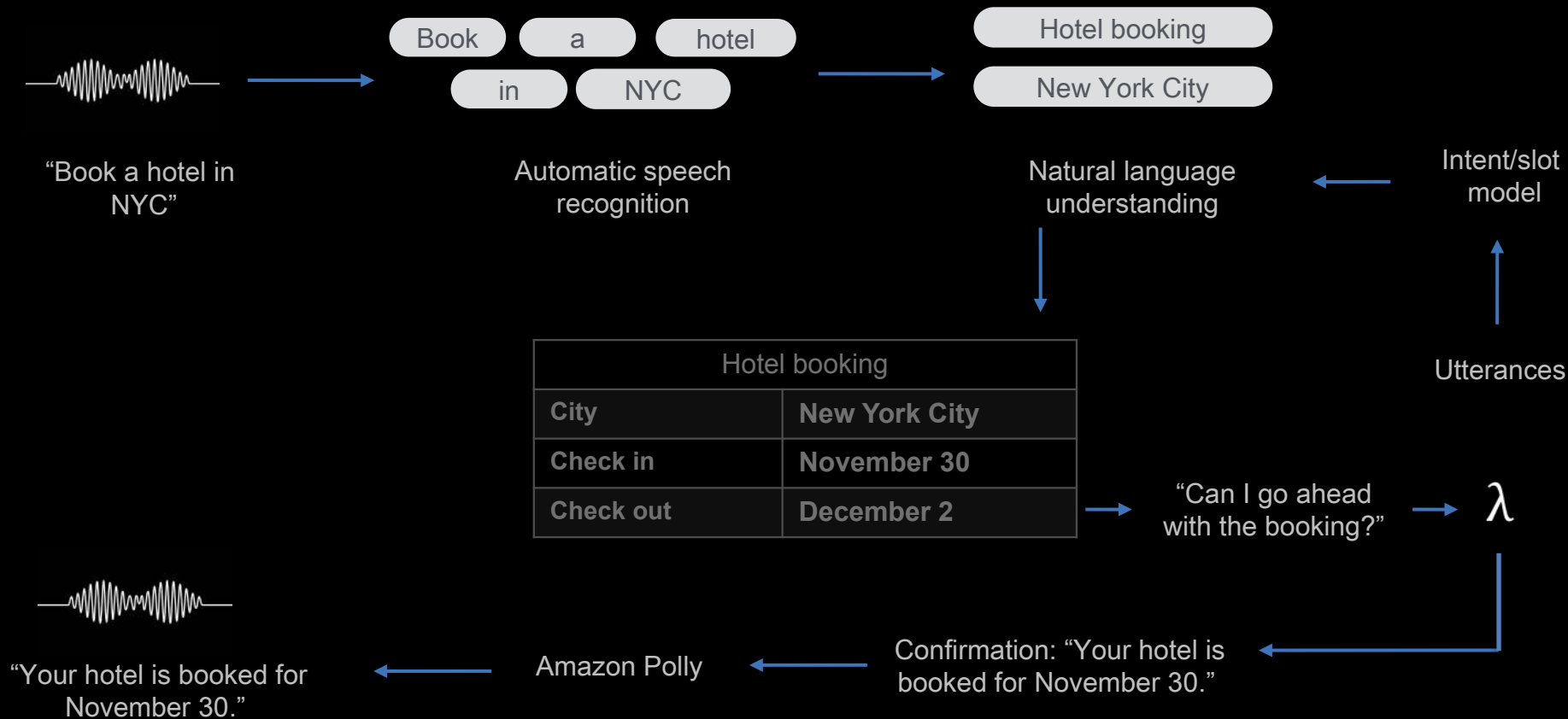
One-click
deployment



Fully
managed

FREE TIER

Lex Use Case: Digital Assistant to Book a Hotel



Chatbots

« With the growing importance of cognitive technologies in every area of business, we were delighted to see **Amazon Lex**, with its Speech Recognition and Natural Language Understanding technologies, added to the broad portfolio of services AWS provides. **Amazon Lex integrates easily** into our existing applications, as well as our new cloud-native serverless architectures. »

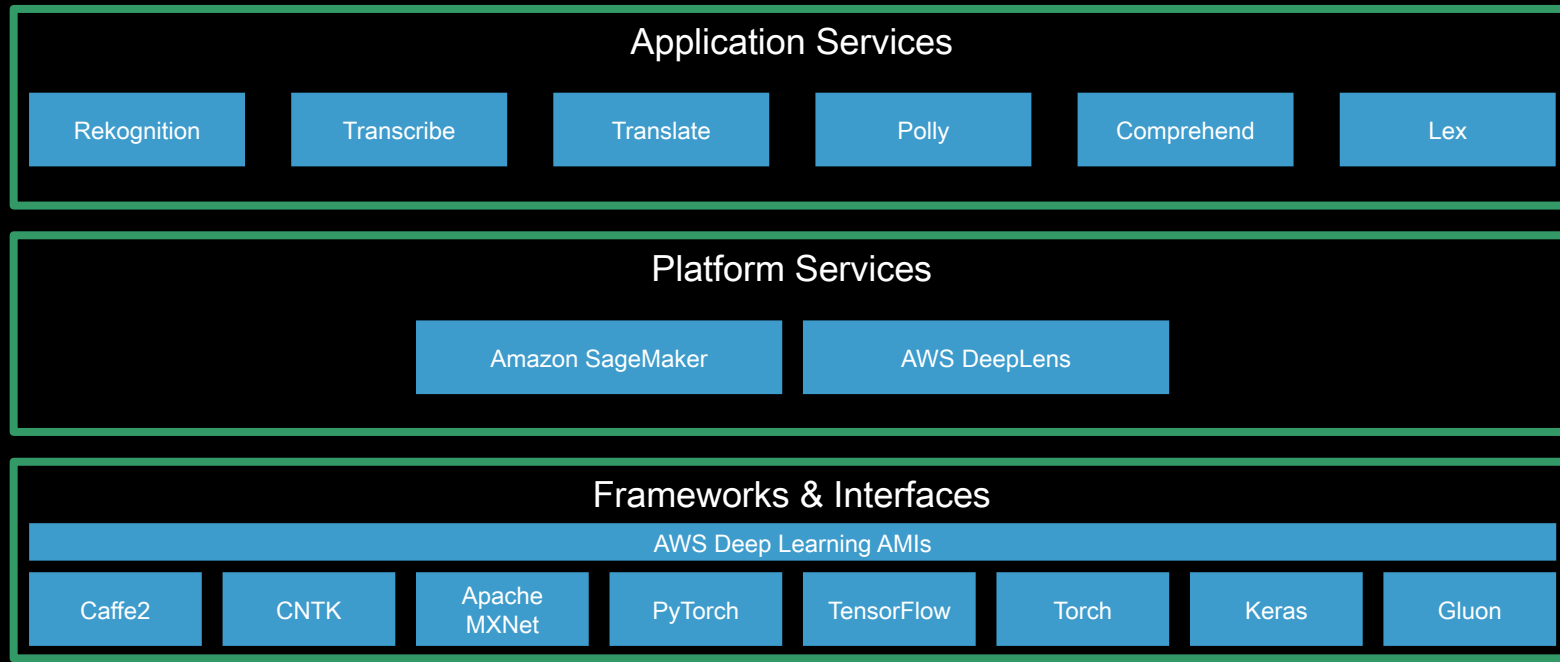
Gillian Armstrong, Technologist, Liberty Mutual



https://www.youtube.com/watch?v=TeLvFqLW_0A

Getting started

The Amazon ML Stack



Getting started

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

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

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

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

<https://github.com/juliensimon/aws/tree/master/AmazonAI>

Thank you!

Julien Simon

Principal Technical Evangelist, AI and Machine Learning

@julsimon