



Building Your Smart Applications with Machine Learning on AWS

Julien Simon, Principal Evangelist, AI & Machine Learning
@julsimon

ML on AWS for Education Webinar Series

- Using Voice Technology to Improve Learning: Amazon Polly for Education, *April 24th at 2pm EDT*
 - Machine Learning Models for Smarter Education Apps with Amazon SageMaker, *May 10th at 2pm EDT*
-

REGISTER

<http://aws.amazon.com/education/machine-learning-on-aws-edu-webinars>

Are you ready to get started today?

If you know how you want to integrate ML on AWS into your product roadmap or technology infrastructure, we want to help! Email us today.

- **EMAIL:** EdTechTeam@amazon.com
- **SUBJECT:** ML on AWS for EDU Pilot Idea
- **CONTENT:** Describe your proposed use of ML on AWS services in your EdTech or institution, and we'll connect you with the right team to kick start your project!



Our mission

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

**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.

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Amazon Rekognition: image content



Amazon
Rekognition

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

FREE TIER

Amazon Rekognition Video: video content

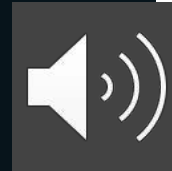
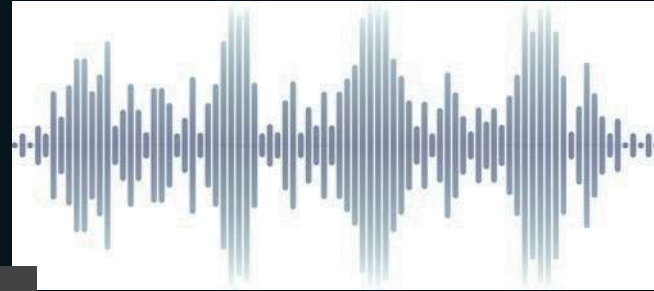


Amazon Polly: text to speech

“Hejsan! Jag heter Astrid och läser upp det som skrivs här.”



Amazon Polly

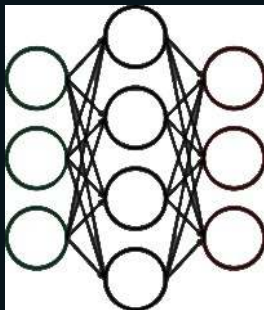


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Amazon Translate



Real-time translation



Powered by deep
learning



12 Language pairs
(6 more languages
to come)



Language detection

FREE TIER

Amazon Transcribe: speech to text



**Available
in preview
today**



Multiple
languages



Intelligent
punctuation and
formatting



Timestamp
generation



Support for
telephony audio



Recognize
multiple
speakers



Custom
vocabulary

FREE TIER

Amazon Comprehend: NLP

Discover valuable insights from text



Entities



Key Phrases



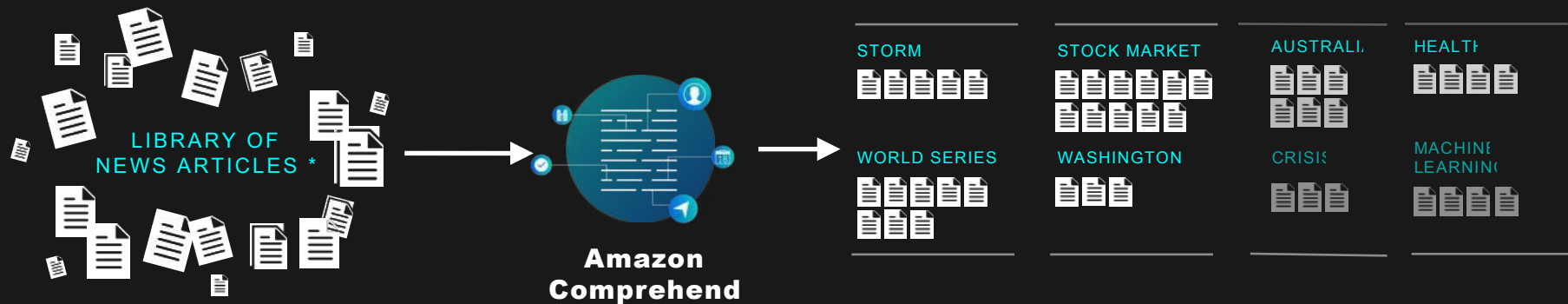
Language



Sentiment

FREE TIER

Amazon Comprehend: topic modeling



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Amazon Lex

Conversational Interfaces



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BookHotel

Intents

A particular goal that the user wants to achieve



Utterances

Spoken or typed phrases that invoke your intent



Slots

Data the user must provide to fulfill the intent



Prompts

Questions that ask the user to input data



Fulfillment

The business logic required to fulfill the user's intent



I'd like to book a hotel.

Sure, which city?

New York City

What date do you check in?

...



November 30th.



Are you sure you want to book the hotel in New York City?

Yes.

Thank you. The reservation went through successfully.

DEMO: Application Services



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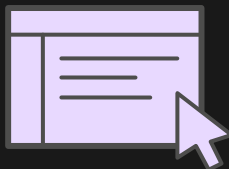


Amazon SageMaker

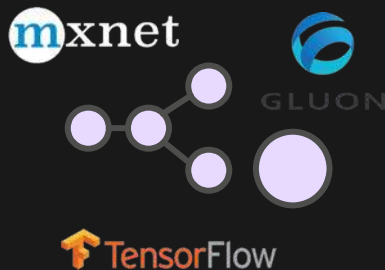
Build, train, and deploy machine learning models at scale



End-to-End
Machine Learning
Platform



Zero setup



Flexible Model
Training

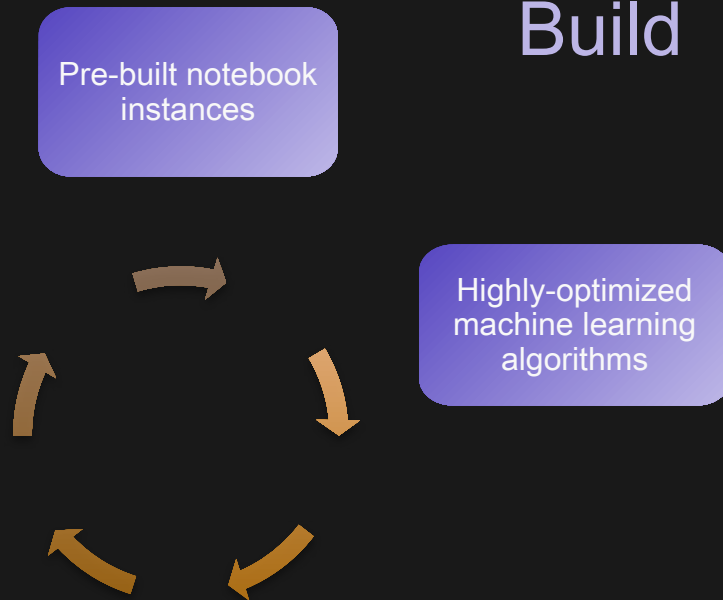


Pay by the second

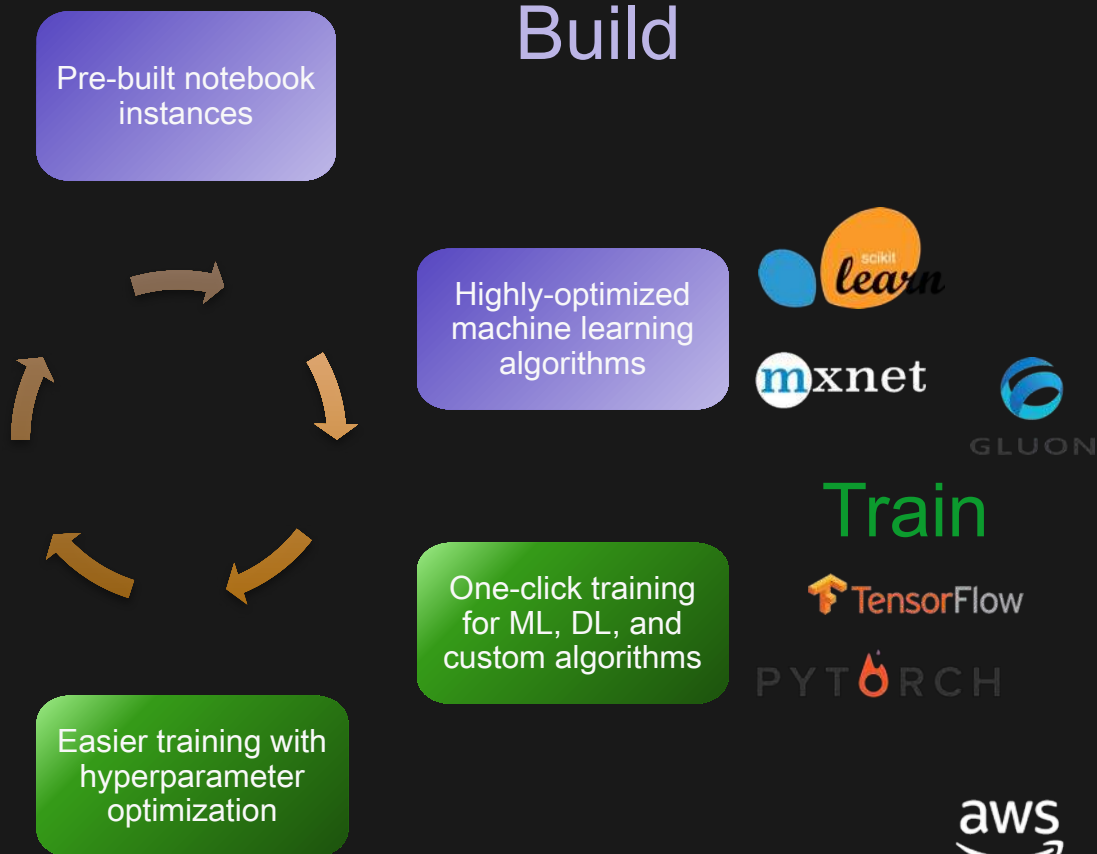
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Amazon SageMaker

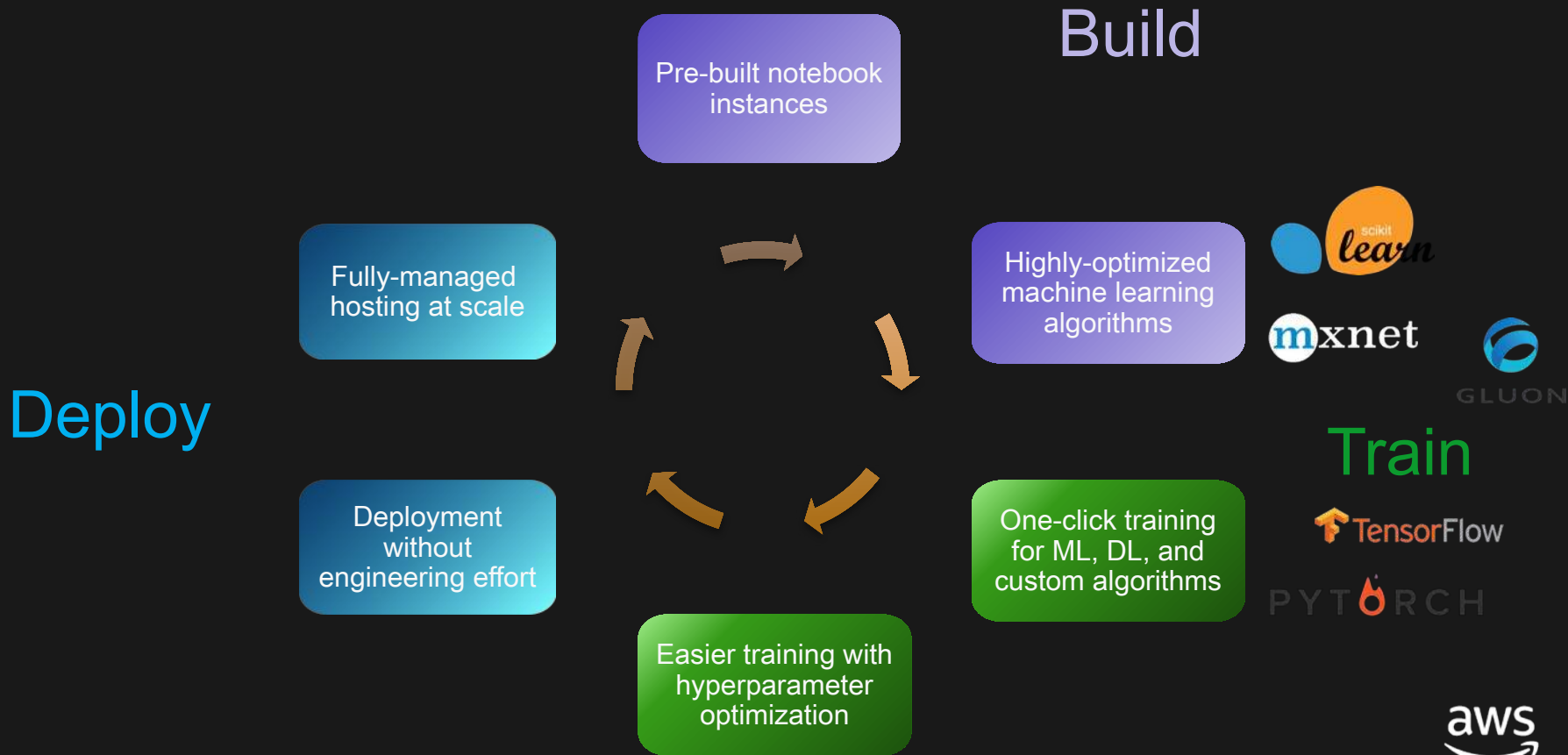
Build



Amazon SageMaker



Amazon SageMaker



DEMO: Amazon SageMaker

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Amazon EC2 P3 Instances

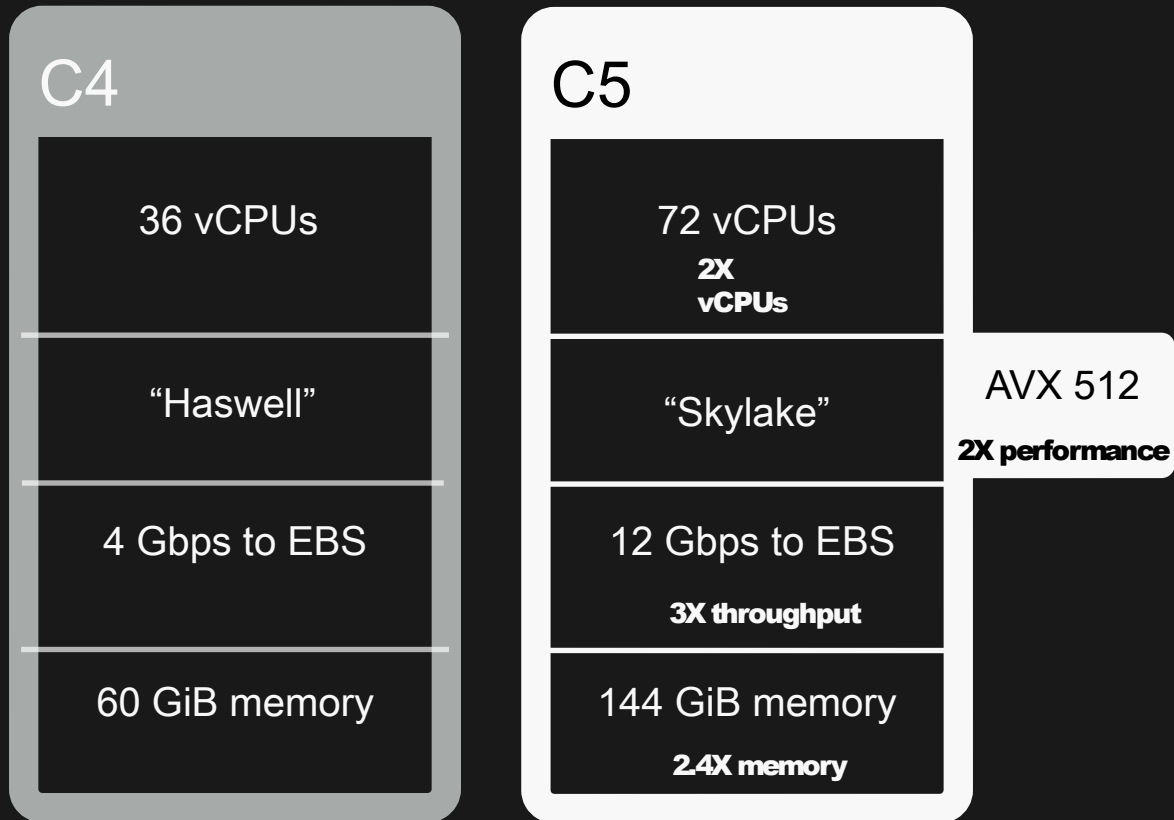
The fastest, most powerful GPU instances in the cloud

- 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

Amazon EC2 C5 instances

C5: Next Generation
Compute-Optimized
Instances with
Intel® Xeon® Scalable
Processor

AWS Compute optimized
instances support the new Intel®
AVX-512 advanced instruction
set, enabling you to more
efficiently run vector processing
workloads with single and
double floating point precision,
such as AI/machine learning or
video processing.



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



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

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://aws.amazon.com/sagemaker>

An overview of Amazon SageMaker <https://www.youtube.com/watch?v=ym7NEYEx9x4>

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

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