Building Your Smart Applications with Machine Learning on AWS

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@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*

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

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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!

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Our mission

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

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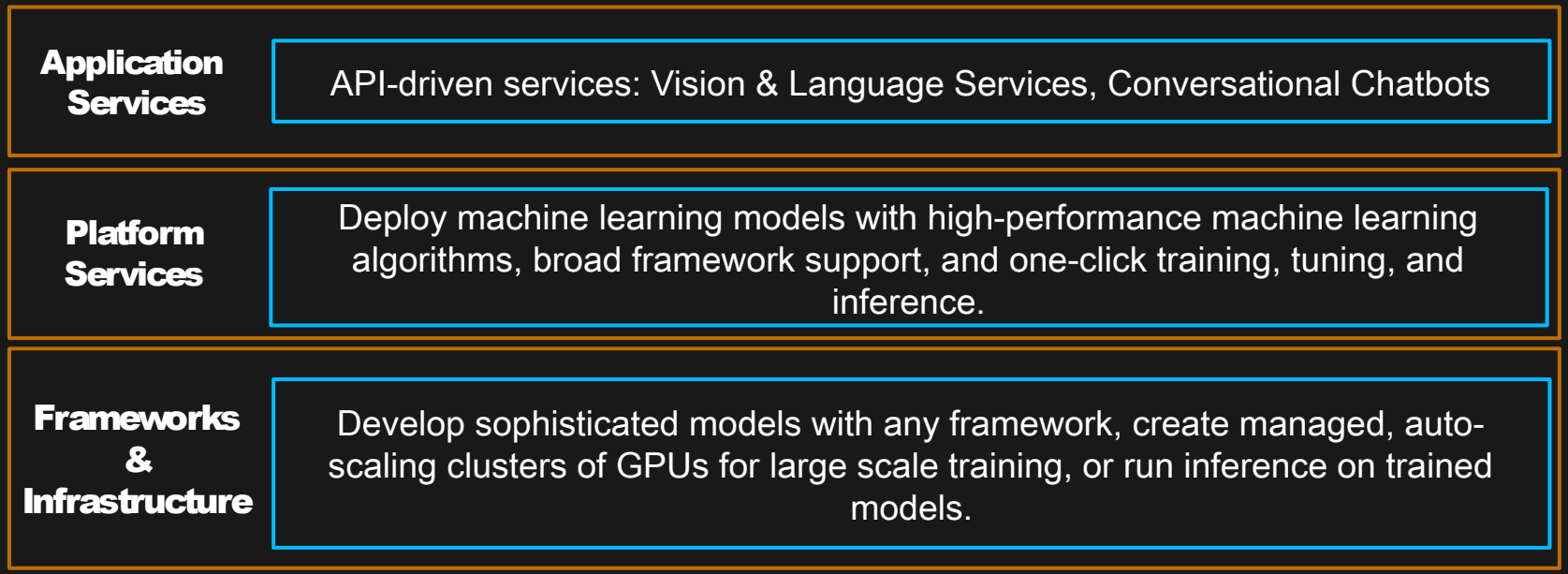

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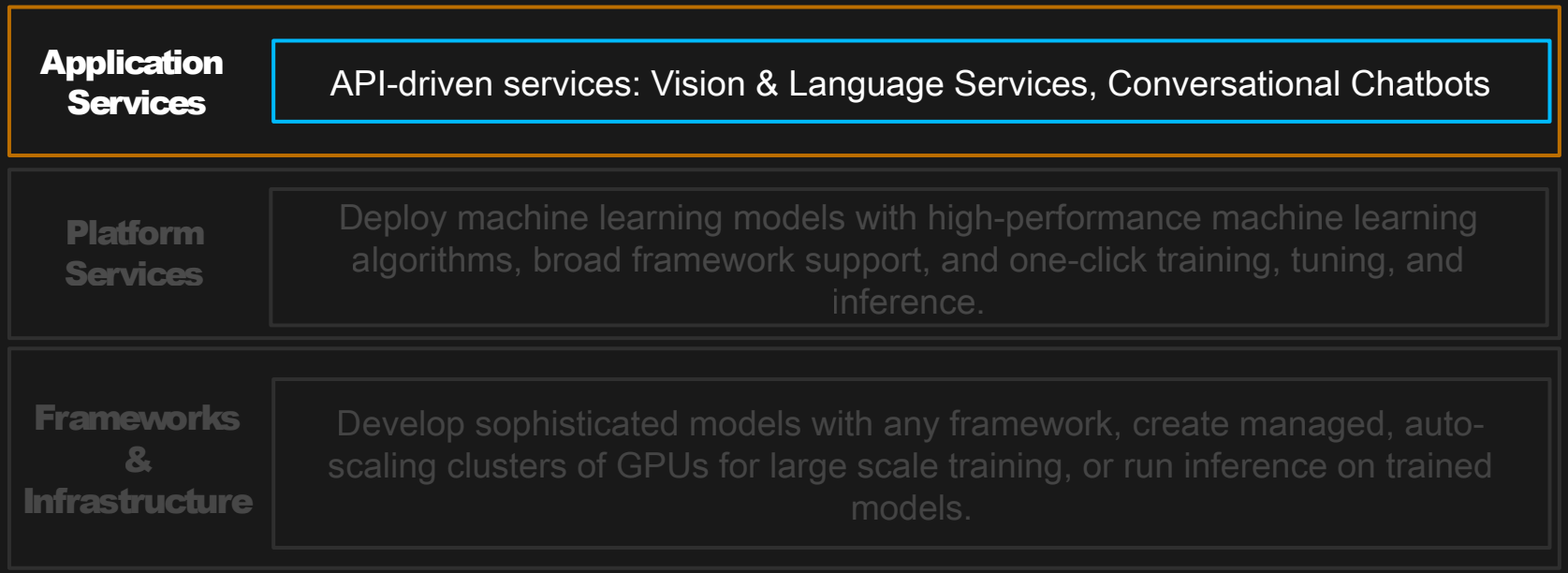

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Amazon Rekognition: image content

Amazon
Rekognition

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

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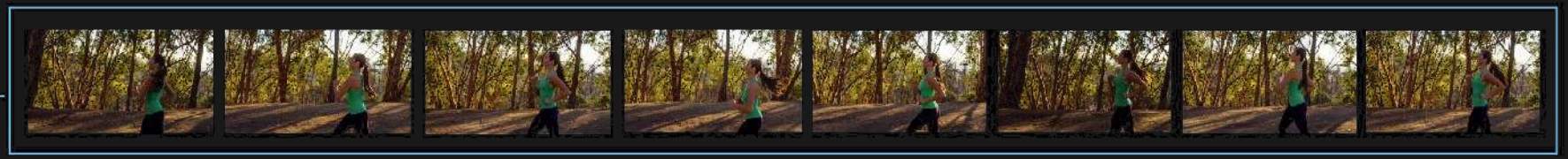
Amazon Rekognition Video: video content



Video

Rekognition

Context

- Spatial
- Temporal
- Auditory

Features

- Objects, Scenes and Concepts
  - Person: 98.9%
  - Plant: 91.4%
  - Sports: 60.0%
  - 0:00
  - 0:27
- Facial Analysis
  - Female: 99.9%
  - Eyes are open: 98.4%
  - Calm: 86.0%
- Face Recognition
  - Person 1
- Activity Detection
  - Sports, Running
- Object Tracking

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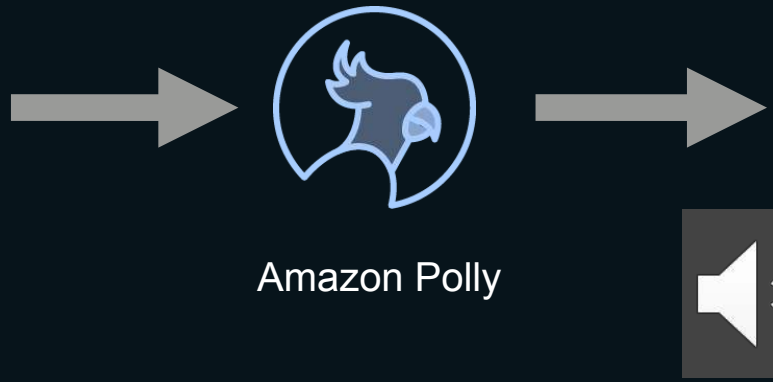
Amazon Polly: text to speech

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



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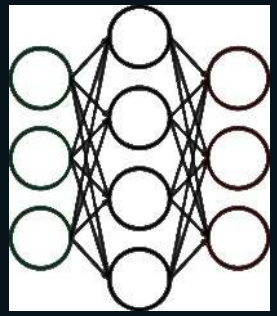
Amazon Translate

Real-time translation



Powered by deep learning

12 Language pairs (6 more languages to come)

Language detection

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aws

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

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aws

Amazon Comprehend: NLP

Discover valuable insights from text

- Entities
- Key Phrases
- Language
- Sentiment

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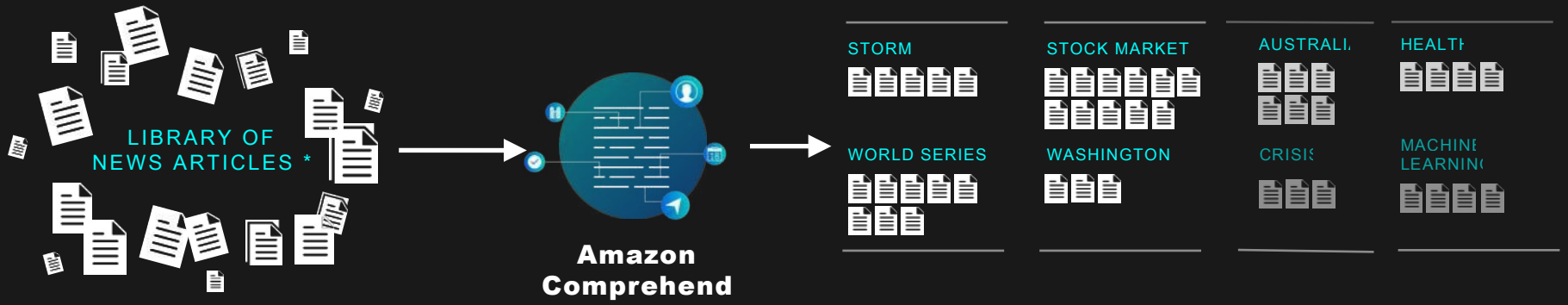
Amazon Comprehend: topic modeling



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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

I'd like to book a hotel.

Sure, which city?

Slots
Data the user must provide to fulfill the intent

New York City

Prompts
Questions that ask the user to input data

What date do you check in?

Fulfillment
The business logic required to fulfill the user's intent

November 30th.

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

Yes.

Thank you. The reservation went through successfully.

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DEMO: Application Services

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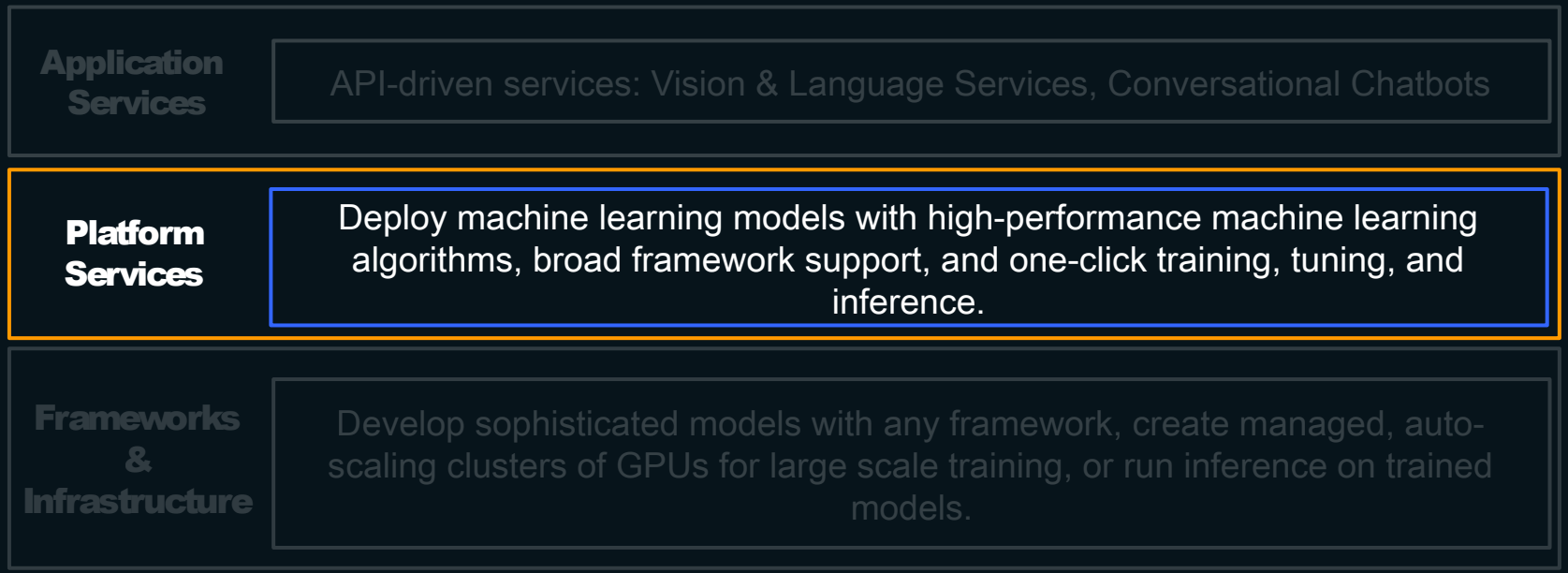

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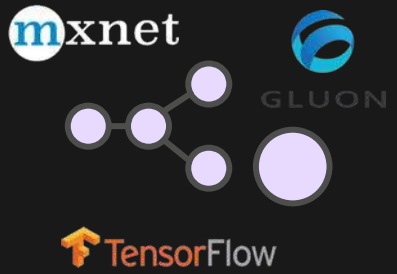
Amazon SageMaker

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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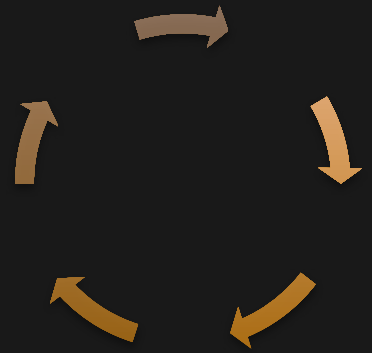
Amazon SageMaker

Build

Pre-built notebook instances



Highly-optimized machine learning algorithms

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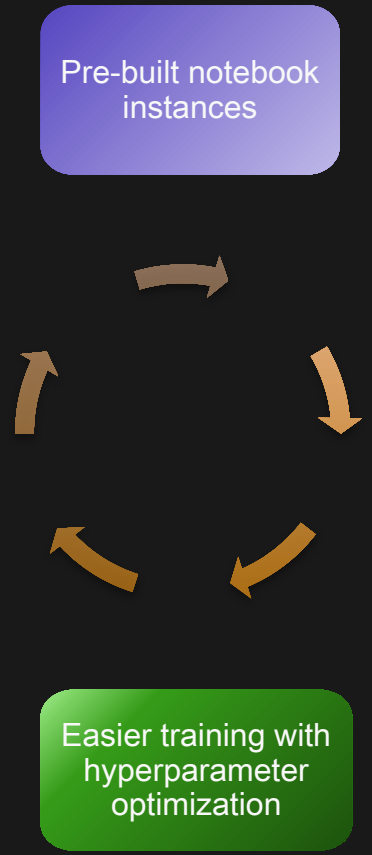
Amazon SageMaker



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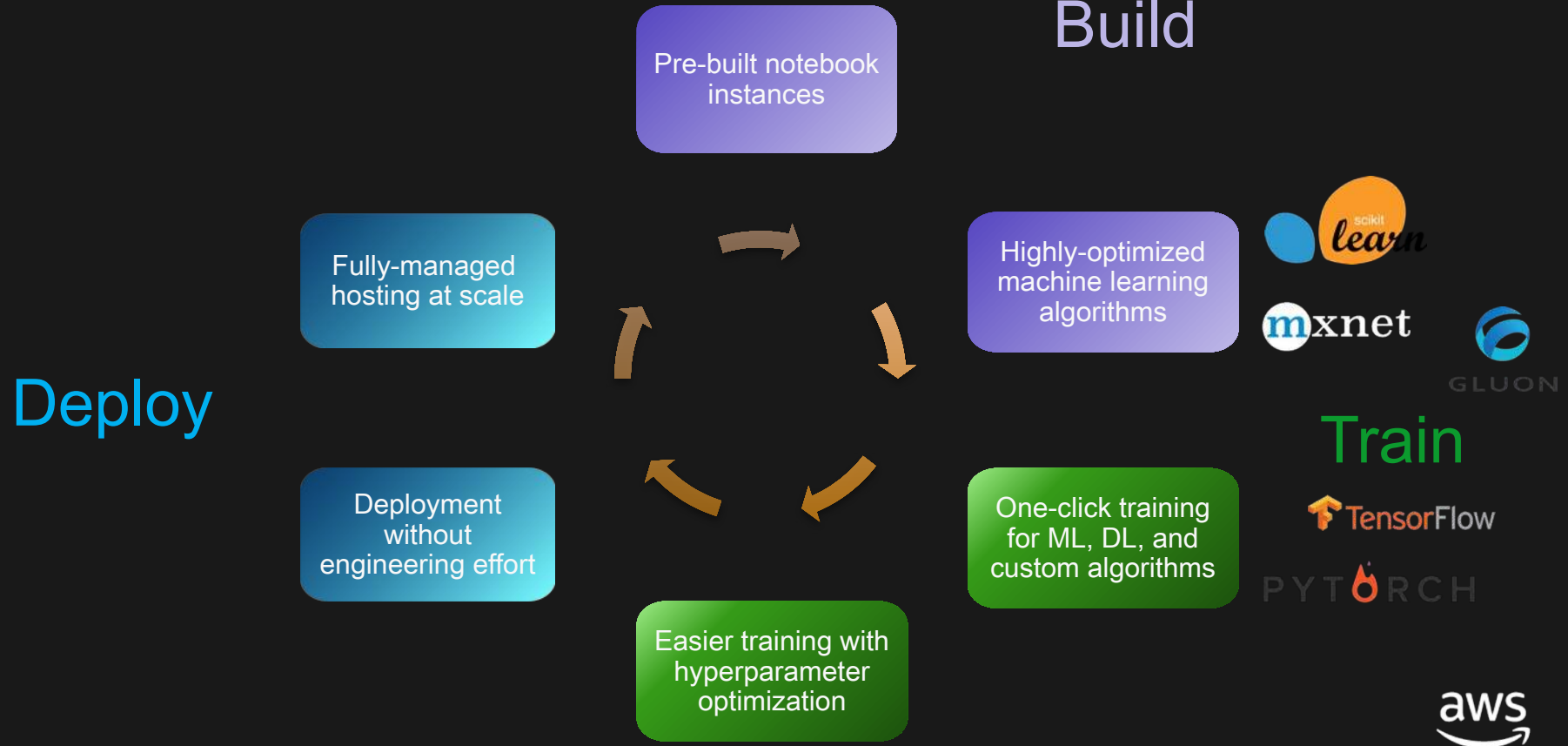
Amazon SageMaker



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DEMO: Amazon SageMaker

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 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

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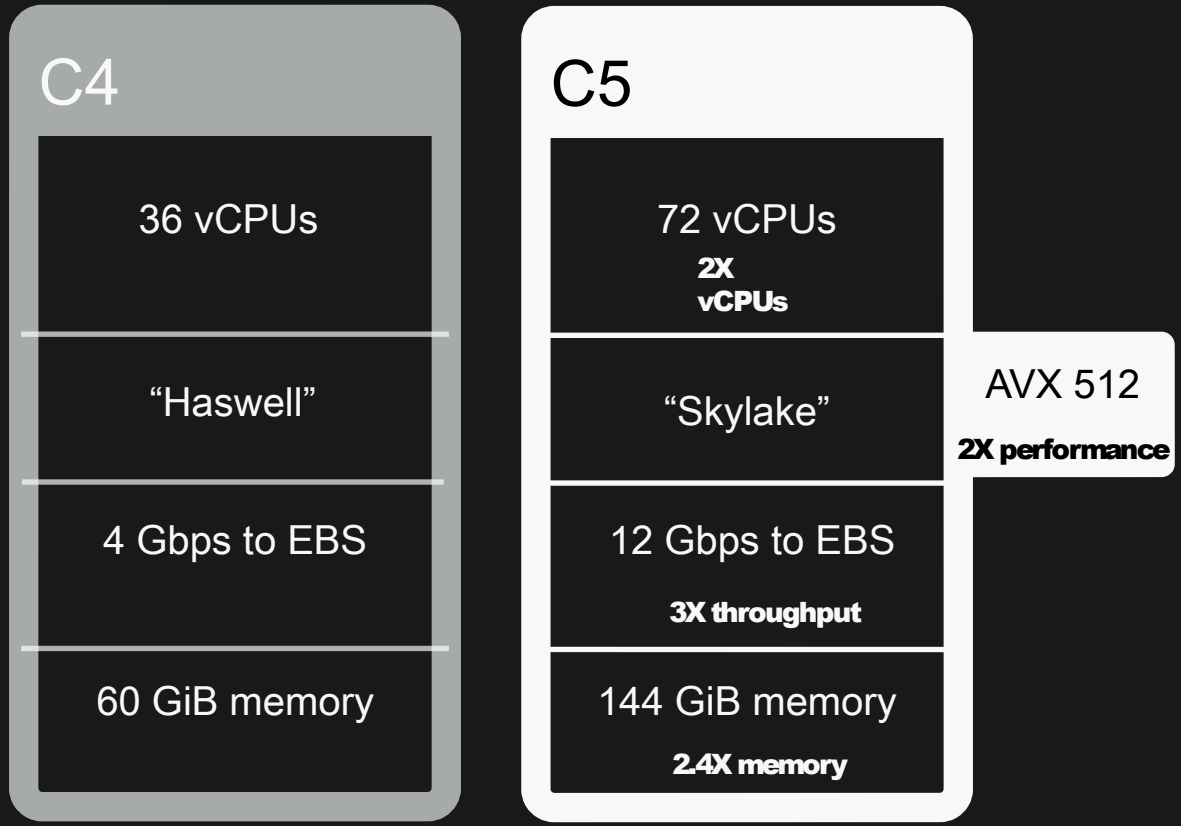
Amazon EC2 C5 instances

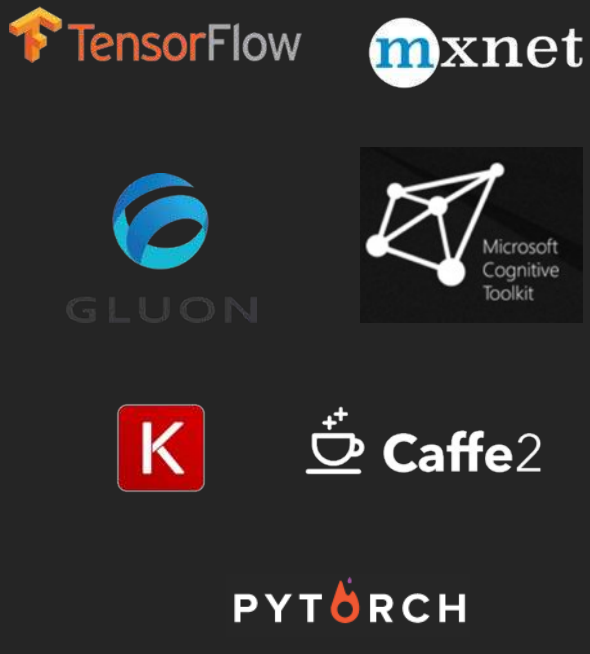
C5: Next Generation Compute-Optimized Instances with Intel® Xeon® Scalable Processor

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

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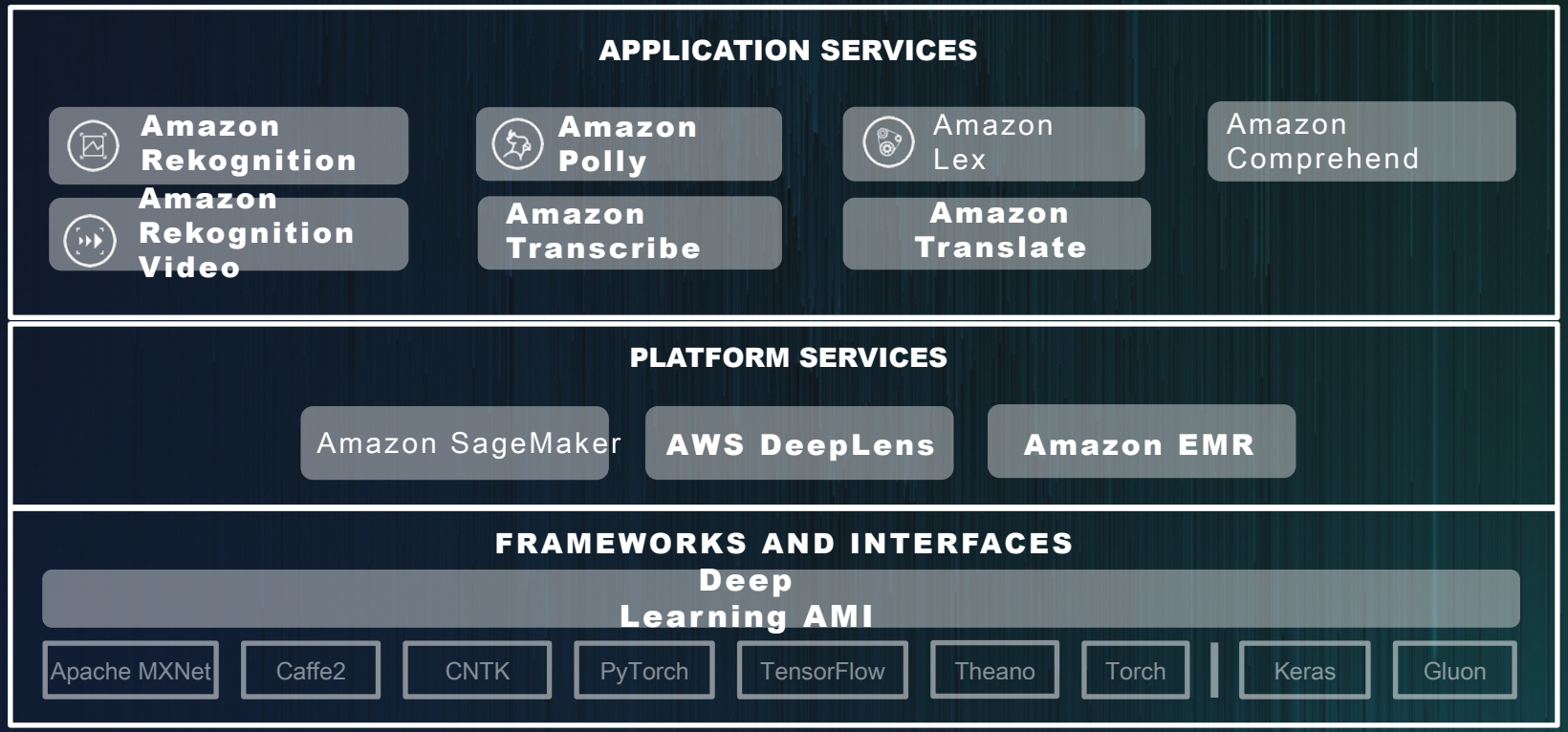
Democratization of AI



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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