



MACHINE LEARNING
WEB DAY



Get started with Amazon SageMaker

Build, Train, and Deploy Machine Learning Models at Scale

Shyam Srinivasan

Sr. Product Marketing Manager – AI/ML

@srishyams

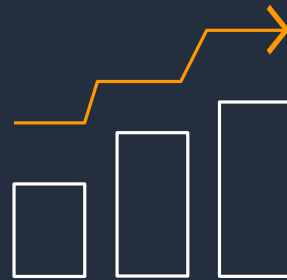
Our mission at AWS

Put machine learning in the
hands of every developer

WHY AWS FOR ML?



Broadest and deepest set of AI and ML services



Accelerate your adoption of ML with SageMaker



Built on the most comprehensive cloud platform

THE AWS ML STACK

Broadest and deepest set of capabilities















AI Services

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

ML Services

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











ML Frameworks + Infrastructure

FRAMEWORKS	INTERFACES	INFRASTRUCTURE								
<div> TensorFlow</div> <div> mxnet</div> <div> PYTORCH</div>	<div> GLUON</div> <div> K Keras</div>	<div> EC2 P3 & P3DN</div> <div> EC2 G4 EC2 C5</div> <div> FPGAS</div> <div> DL CONTAINERS & AMIs</div> <div> ELASTIC CONTAINER SERVICE</div> <div> ELASTIC KUBERNETES SERVICE</div> <div> GREENGRASS</div> <div> ELASTIC INFERENCE</div> <div> INFERENTIA</div>								

THE AWS ML STACK

Broadest and deepest set of capabilities

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AMAZON SAGEMAKER

Bringing machine learning to all developers



Collect and
prepare
training data



Choose and
optimize your
ML algorithm



Set up and manage
environments
for training



Train and
tune model
(trial and error)



Deploy
model in
production



Scale and manage the
production
environment

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Bringing machine learning to all developers

Pre-built
notebooks for common
problems



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Successful models require high-quality data

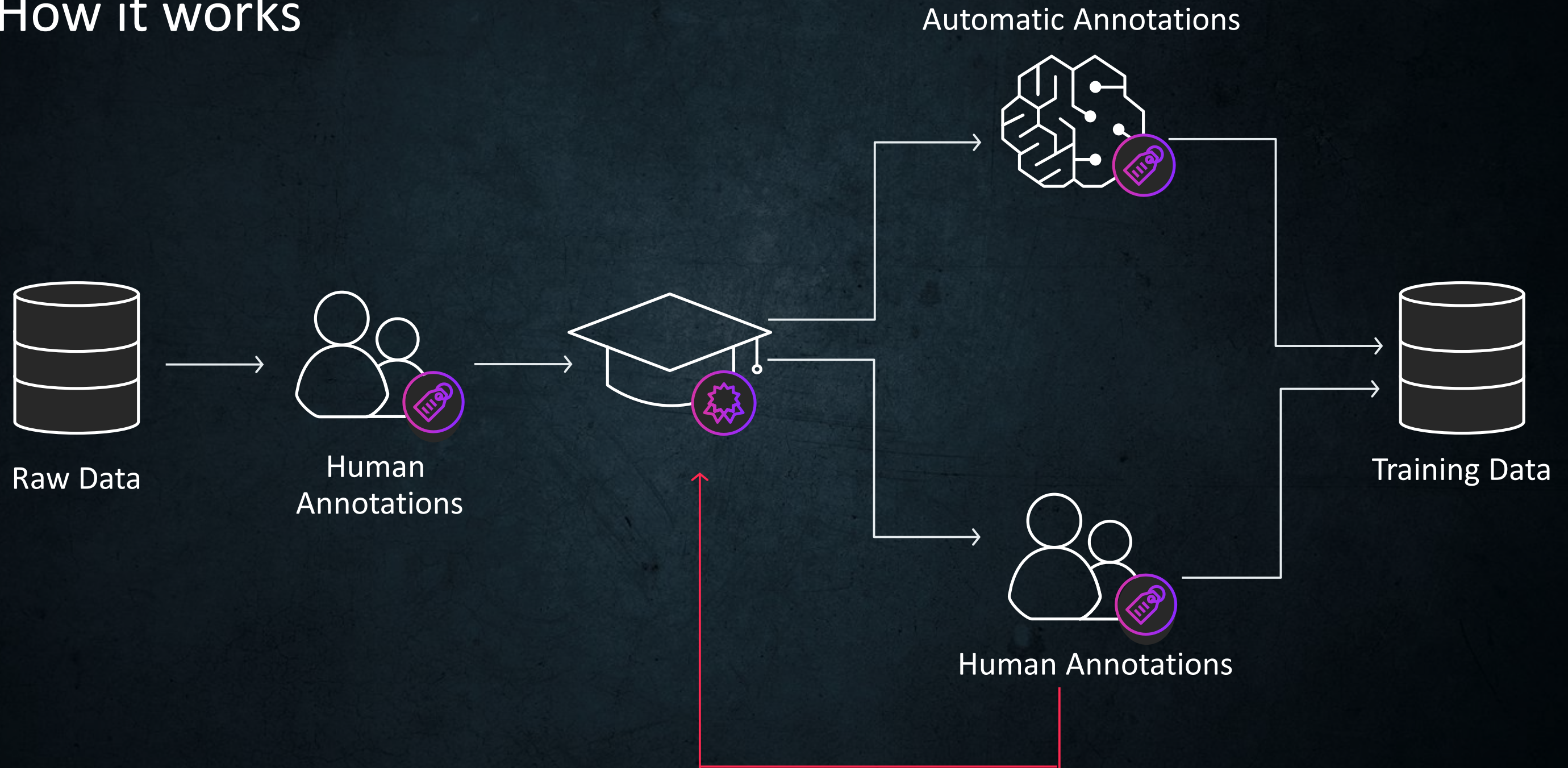


Amazon SageMaker Ground Truth

Build highly accurate training datasets and reduce data labeling costs
by up to 70% using machine learning

Amazon SageMaker Ground Truth

How it works



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Collect and
prepare
training data

Built-in, high
performance
algorithms



Choose and
optimize your
ML algorithm

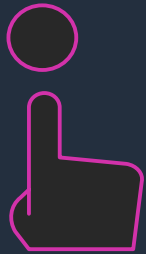
- K-Means Clustering
- Principal Component Analysis
- Neural Topic Modelling
- Factorization Machines
- Linear Learner (Regression)
- BlazingText
- Reinforcement learning
- XGBoost
- Topic Modeling (LDA)
- Image Classification
- Seq2Seq
- Linear Learner (Classification)
- DeepAR Forecasting

AWS Marketplace for Machine Learning

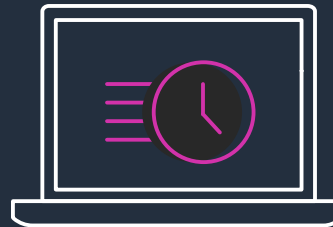
Hundreds of algorithms and models that can be deployed
directly to Amazon SageMaker

AWS Marketplace for Machine Learning

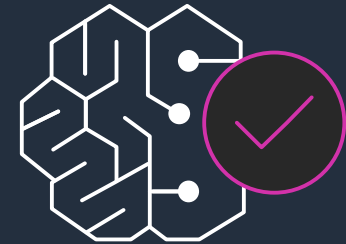
ML algorithms and models available instantly



Browse or search
AWS Marketplace



Subscribe in a
single click



Available in
Amazon SageMaker

KEY FEATURES

SELLERS

- Automatic labeling via machine learning
- IP protection
- Automated billing and metering

- Broad selection of paid, free, and open-source algorithms and models

BUYERS

- Data protection

AMAZON SAGEMAKER

Bringing machine learning to all developers

Pre-built
notebooks for common
problems



Collect and
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Built-in, high
performance
algorithms



Choose and
optimize your
ML algorithm

One-click
training



Set up and manage
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Train and
tune model
(trial and error)



Deploy
model in
production



Scale and manage the
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Optimization



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Deploy
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Scale and manage the
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Model optimization is extremely complex

mxnet

TensorFlow

PYTORCH

intel

nVIDIA

Qualcomm

cādence

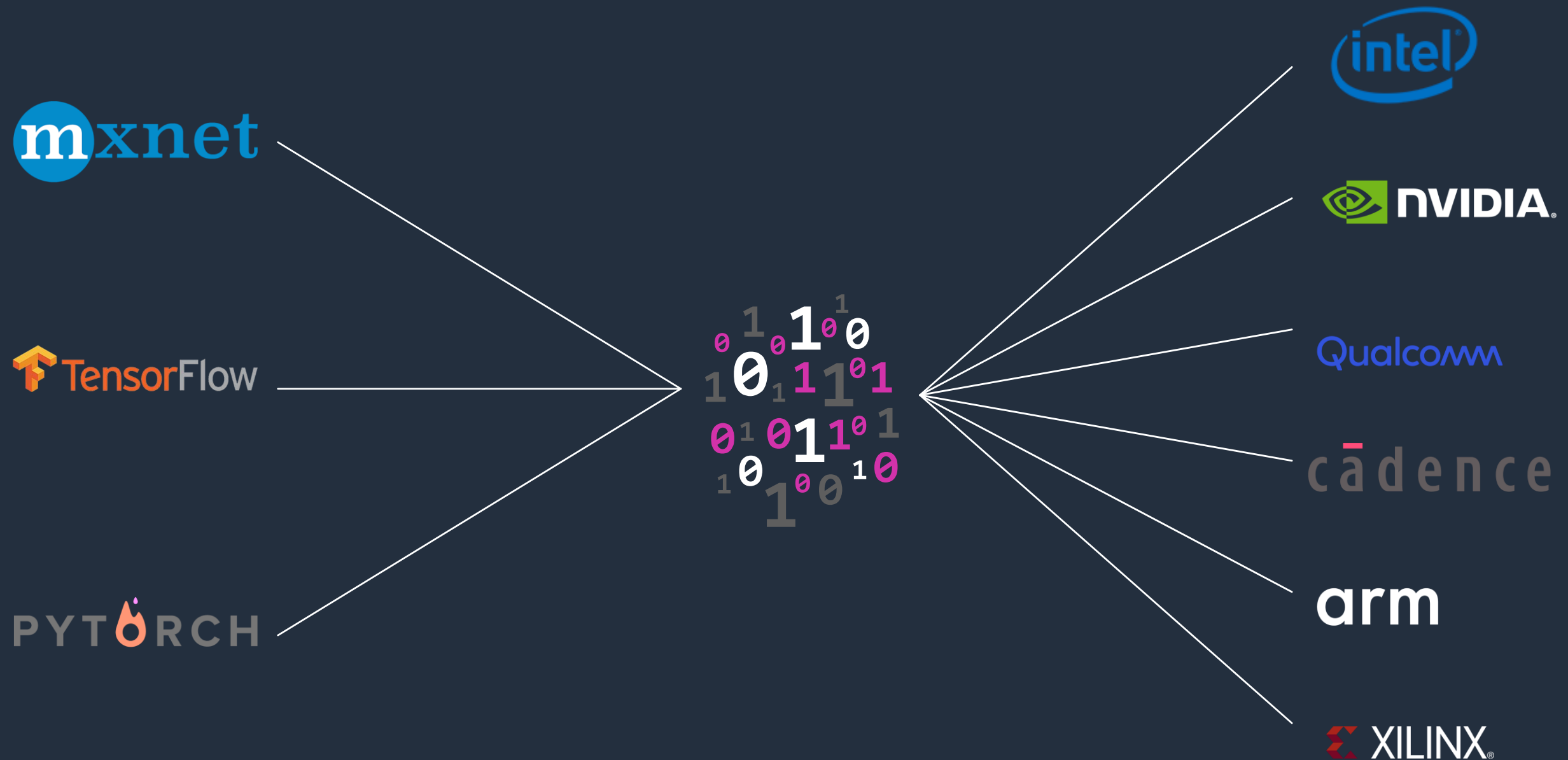
arm

XILINX

Amazon SageMaker Neo

Train once, run anywhere with 2x the performance

Amazon SageMaker Neo: Train once, run anywhere



Amazon SageMaker Neo

Train once, run anywhere with 2x the performance



Get accuracy
and performance



Automatic optimization



Broad framework
support



Broad hardware
support

KEY FEATURES

Open-source device runtime and compiler,
1/10th the size of original frameworks

AMAZON SAGEMAKER

Bringing machine learning to all developers

Pre-built
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Optimization



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Deploy
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Fully managed with
auto-scaling, health checks,
automatic handling
of node failures,
and security checks

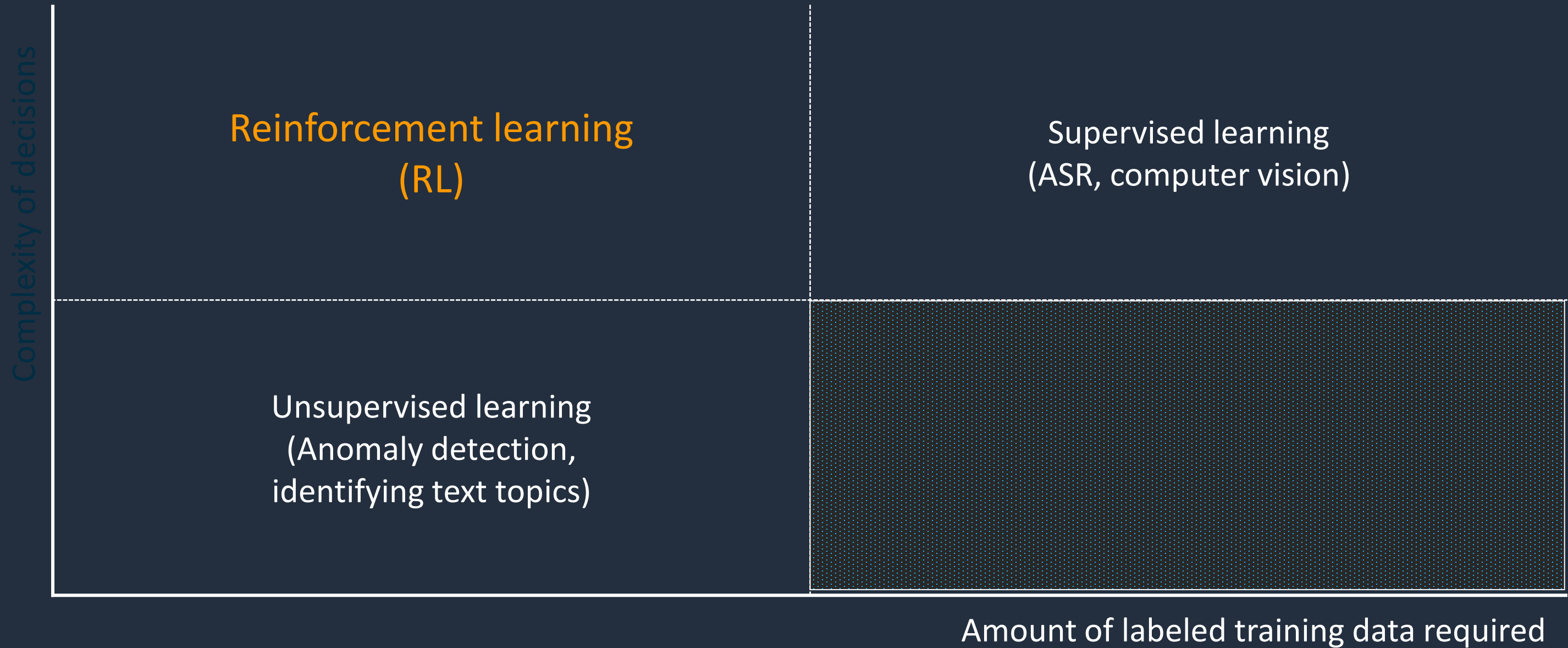


Scale and manage the
production
environment

So what's next for
machine learning?

How do you teach machine learning models to make decisions
when there is no training data?

Introducing Reinforcement learning (RL)



What is a RL environment?



Representation
of the real world



Programmed
to represent real-
world conditions



Enables interaction
with user or a
computer program



Dynamic and updates
itself based on the
interactions and
programmed behavior

This makes RL applicable in many domains



Robotics



Industrial
control



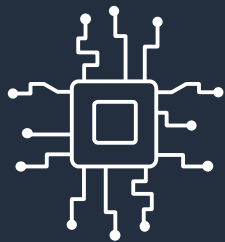
HVAC



Autonomous
vehicles



Advertising



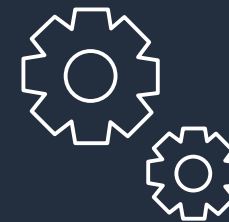
NLP



Operations



Finance



Resource
allocation



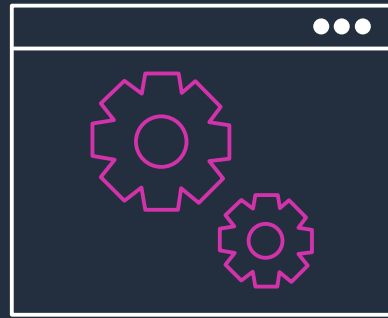
Online content
delivery

Amazon SageMaker RL

Build, train, and deploy models with reinforcement learning

Amazon SageMaker RL

Reinforcement learning for developers and data scientists



Fully
managed



Broad support
for frameworks



Broad support for simulation
environments

KEY FEATURES

2D & 3D physics
environments and
OpenGym support

Supports Amazon Sumerian, AWS
RoboMaker and the open source
Robotics Operating System (ROS)
project

Example notebooks
and tutorials



AMAZON SAGEMAKER

REDUCE COSTS

70%

cost reduction for data labeling
using Ground Truth

75%

cost reduction for inference with
Elastic Inference

90%

cost reduction with managed spot
training

INCREASE PERFORMANCE

10x

better algorithm
performance

2x

performance increases from
model optimization with Neo

90%

AWS-optimized
TensorFlow

EASE-OF-USE

One-click

model training
and deployment

Train once

run anywhere

SECURITY & COMPLIANCE

SOC, PCI, ISO,
HIPAA, C5, OSPAR, HITRUST CSF

The Amazon ML stack:

Broadest & deepest set of capabilities

Easily add intelligence to applications without machine learning skills

AI SERVICES

Vision | Documents | Speech | Language | Chatbots | Forecasting | Recommendations

Build, train, and deploy machine learning models quickly and easily

ML SERVICES

Data labeling | Pre-built algorithms & notebooks | One-click training and deployment

ML FRAMEWORKS & INFRASTRUCTURE

Flexibility & choice, highest-performing infrastructure

Support for ML frameworks | Compute options purpose built for ML

Resources

- Product Page: <https://aws.amazon.com/sagemaker>
- Tutorial: <https://aws.amazon.com/getting-started/tutorials/build-train-deploy-machine-learning-model-sagemaker/>
- Technical Video Series:
https://www.youtube.com/playlist?list=PLhr1KZpdzukcOr_6j_zmSrvYnLUtgqsZz
- Blogs: <https://aws.amazon.com/blogs/machine-learning/category/artificial-intelligence/sagemaker/>

Thank You!