AWS | Machine Learning

Get Started with Machine Learning - No PhD Required

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WHAT WE'LL COVER TODAY

- ML context
- ML on AWS
- AWS DeepRacer
- AWS DeepLens 2019 edition
- AWS Machine Learning Training and Certification
- Resources

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ML IS THE CENTERPIECE FOR DIGITAL TRANSFORMATION

Customer experience

Business operations

Decision making

Innovation

Competitive advantage

40% of digital transformation initiatives supported by AI in 2019

—IDC 2018

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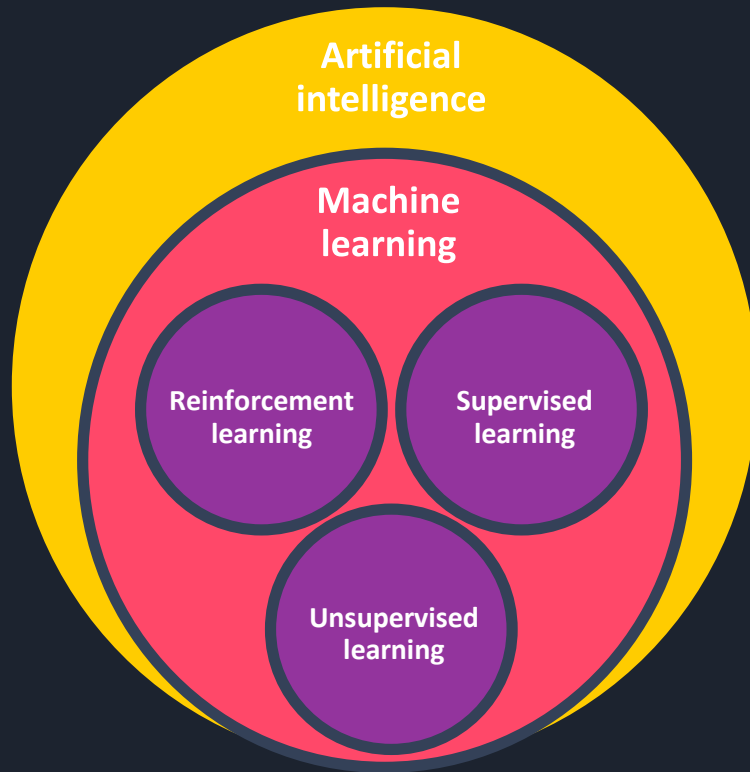# ML SKILLS BUILDING IS CRITICAL FOR THE FUTURE

58m

Jobs created by the growth of AI in the next few years —World Economic Forum

300k

AI engineers worldwide —Tencent Research Institute

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ML IN THE BROADER CONTEXT OF AI

Our mission at AWS

Put machine learning in the
hands of every developer

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learning

WHY AWS FOR ML?

**Broadest and
deepest set of AI
and ML services**

200 new features and services launched
this last year alone

Unmatched flexibility

**Accelerate your
adoption of ML
with SageMaker**

70% cost reduction
in data-labeling

10x faster performance

75% lower inference cost

**Built on the most
comprehensive cloud
platform optimized for ML**

AWS holds the top spots
on Stanford's benchmark,
for fastest training time, lowest cost,
lowest inference latency

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More machine learning happens on AWS than anywhere else

10,000+ customers | 2x the customer references | 85% of TensorFlow projects in the cloud happen on AWS

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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
TensorFlow mxnet PYTORCH	GLUON K Keras

INFRASTRUCTURE							
EC2 P3 & P3DN	EC2 G4	EC2 C5	FPGAS	DL CONTAINERS & AMIs	GREENGRASS	ELASTIC INFERENCE	INFERENTIA

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Our mission at AWS

Put machine learning in the
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HOW I STARTED A CAREER IN MACHINE LEARNING
NO PhD REQUIRED

ALEX SCHULTZ
Machine Learning Software Engineer
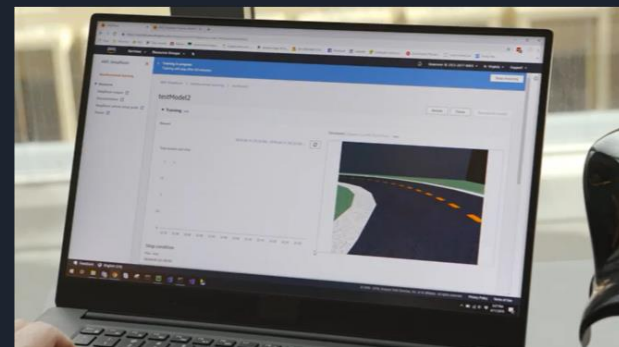
BUILD YOUR MACHINE LEARNING SKILLS
NO PhD REQUIRED

Learn Hands-on

Get Certified

AWS DeepRacer
Reinforcement Learning

AWS DeepLens
Deep Learning

**Machine Learning
Certification**

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aws.amazon.com/machine-learning/learn/

AWS DEEPRACER

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AWS DEEPRACER

A fully autonomous 1/18th-scale race car designed to help you learn
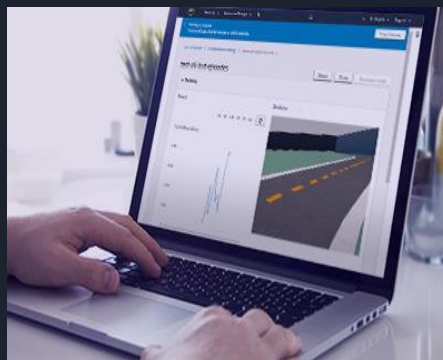machine learning through autonomous driving

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AWS DEEPRACER

Robotic autonomous
race car

Racing simulator
powered by AWS Robomaker, to train
with Amazon Sagemaker RL

Racing League
Live and Virtual Races

AWS DeepRacer is a Free Tier Eligible service that allows developers to get started with 10 hours worth of credits

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RACES

SUMMIT CIRCUIT

Race in-person at AWS events

Mexico City - August 29

Toronto - October 3rd

VIRTUAL CIRCUIT

Race virtually via the console

Shanghai Sudu Race is open until August 31st

WEEKLY CHALLNGES

Win AWS Credits

Time Target 50 Challenge
8/9 12:00am PST to 8/16 11:59pm PST

This challenge will award developers that can submit lap times closest to 50.000 seconds.

Rookie Challenge
8/2 8:00am PST to 8/8 11:59pm PST

Even the best in the league had to start somewhere. Submit your first model to the virtual leaderboard today to be entered for a chance to win!

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LEARN

https://aws.amazon.com/deepracer/racing-tips/

https://www.aws.training/Details/eLearning?id=32143

DEEPRACER TV

Episode 1 kicks off 2019 DeepRacer TV competition coverage in Amsterdam

Episode 2 heads down under as competitors in Sydney vie for the top spot

Episode 3 crosses the pond for the London stop of the AWS DeepRacer Summit circuit.

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SHOW FIRST x SECONDS OF THE LONDON EPISODE

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AWS DEEPLENS 2019 EDITION

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AWS DEEPLENS

The world's first deep learning-enabled
video camera for developers

- Purpose-built for ML-skills development

- Fully programmable and customizable

- Build custom Amazon SageMaker models

- 10-minutes to your first deep learning project

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AWS DEEPLENS

The world's first deep learning-enabled
video camera for developers

NEW in the 2019 edition

- Seven new countries:
  - Hey, AWS DeepLens: Amazon.ca
  - Hallo, AWS DeepLens: Amazon.de
  - Hola, AWS DeepLens: Amazon.es
  - Bonjour, AWS DeepLens: Amazon.fr
  - Ciao, AWS DeepLens: Amazon.it
  - こんにちは、ディープレンズ: Amazon.co.jp
  - Good day, AWS DeepLens: Amazon.co.uk
  - Howdy, AWS DeepLens: Amazon.com

- Run models 2 x faster with Amazon SageMaker Neo optimization

- New tutorials: construction worker safety (hard hat detection), coffee drinking detection, sentiment analysis.

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DEEPLENS SPECIFICATIONS

- Intel Atom Processor
- Gen9 graphics
- Ubuntu OS- 16.04 LTS
- 100 GFLOPS performance
- Dual band Wi-Fi
- 8 GB RAM
- 16 GB Storage (eMMC)
- 32 GB SD card
- 4 MP camera with MJPEG
- H.264 encoding at 1080p resolution
- 2 USB ports
- Micro HDMI
- Audio out
- AWS Greengrass preconfigured
- clDNN Optimized for MXNet

GET STARTED WITH SAMPLE PROJECTS

ARTISTIC STYLE TRANSFER

OBJECT DETECTION

FACE DETECTION / RECOGNITION

ACTIVITY DETECTION

HOT DOG / NOT HOT DOG

CAT VS. DOG

HEAD POSE DETECTION

BIRD CLASSIFICATION

OR CREATE YOUR **OWN CUSTOM PROJECT IN AMAZON SAGEMAKER**

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NEW TUTORIALS

AWS DeepLens ✕

▼ Resources
Projects
Devices
Models

Recipes

▶ Helpful links

Build a worker safety system
Use AWS DeepLens and Amazon Rekognition to build an application that helps identify if a person at a construction site is wearing the right safety gear, in this case, a hard hat.

Level
Beginner

Who drinks the most coffee?
Learn to build an application that counts the number of cups of coffee that people drink and displays the tally on a leaderboard.

Level
Intermediate

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DEMO

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DEVELOPER USE CASES

ReadToMe
Created by Alex Schultz

ReadToMe is a deep learning enabled application that is able to read books to kids. In this case, reading Green Eggs and Ham, by Dr. Seuss.

Dee
Created by Matthew Clark

Dee is a fun AWS DeepLens interactive device for children. The device asks children to answer questions by showing a picture of the answer.

SafeHaven
Created by Nathan Stone and Peter McLean

SafeHaven uses Alexa and AWS DeepLens to bring peace of mind for vulnerable people and their families**.**

Access the GitHub repos and more use cases: https://aws.amazon.com/deeplens/community-projects

ENTERPRISE USE CASES

"Fender will use DeepLens to track hundreds of guitar necks and bodies throughout the manufacturing facility daily."
Michael Spandau, CIO, Fender.

"We're excited about Amazon's DeepLens solution and its ability to expedite our implementation process to enhance the guest experience. We wanted to get started expeditiously and signed up for a DeepLens workshop with AWS and it didn't disappoint."
Reza Rasoulian VP, Global Connectivity of Carnival.

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AWS Machine Learning Training and Certification

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AWS ML TRAINING AND CERTIFICATION

Role-based learning paths focus on how to apply ML to unlock new insights and value in role..

Business
Decision
Makers

Developers

Data Scientists

Data Platform Engineers

aws.training/machinelearning

- **LIVE NOW**: 30+ digital courses with 45+ hours of content for learners at all levels
- Get certified - schedule with convenience at testing centers worldwide
- Join AWS Certified global community, earn digital badges, special event access, and other benefits

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AWS DeepRacer Scholarship Challenge from Udacity is now open for enrollment

https://www.udacity.com/aws-deepracer-scholarship

200 SEATS

Top performers in the AWS DeepRacer Scholarship Challenge will earn one of 200 full scholarships to:

Machine Learning Engineer

NANODEGREE PROGRAM

Learn advanced machine learning techniques and algorithms and how to package and deploy your models to a production environment.

●●○ INTERMEDIATE

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CHOOSE YOUR ML LEARNING PATH

aws.amazon.com/machine-learning/learn

BUILD NOW

Get started with easy-to-use AI services and a few lines of code. Pick from one of the use cases below and follow the steps to see for yourself.

MEDIA SUBTITLING AND LOCALIZATION
Learn more »

AI-DRIVEN SOCIAL MEDIA DASHBOARD
Learn more »

CONTACT CENTER MODERNIZATION
Learn more »

LEARN HANDS-ON

Learn though hands-on exploration with a physical device. Designed for developers of all skill levels to learn ML in a fun, practical way.

LEARN ML THOUGH AUTONOMOUS DRIVING WITH AWS DEEPRACER
Learn more »

AWS DEEPRACER VIRTUAL LEAGUE
Watch video »

LEARN HOW TO BUILD COMPUTER VISION APPS WITH AWS DEEPLENS
Learn more »

GET ML CERTIFIED

The the same ML courses used to train engineers at Amazon are available for free. When ready, validate your expertise with an industry-recognized credential.

FREE ON-DEMAND DIGITAL TRAINING
Learn more »

TAILORED ML LEARNING PATH FOR DEVELOPERS
Learn more »

GET AWS MACHINE LEARNING CERTIFIED
Learn more »

aws.amazon.com/machine-learning/learn

Thank you!

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