

# AWS | Machine Learning

**Get Started with Machine Learning - No PhD Required**

Sally Revell  
Sr Manager AI/ML Product Marketing

# WHAT WE'LL COVER TODAY

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

# ML SKILLS BUILDING IS CRITICAL FOR THE FUTURE

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58m

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

300k

AI engineers worldwide —Tencent Research Institute

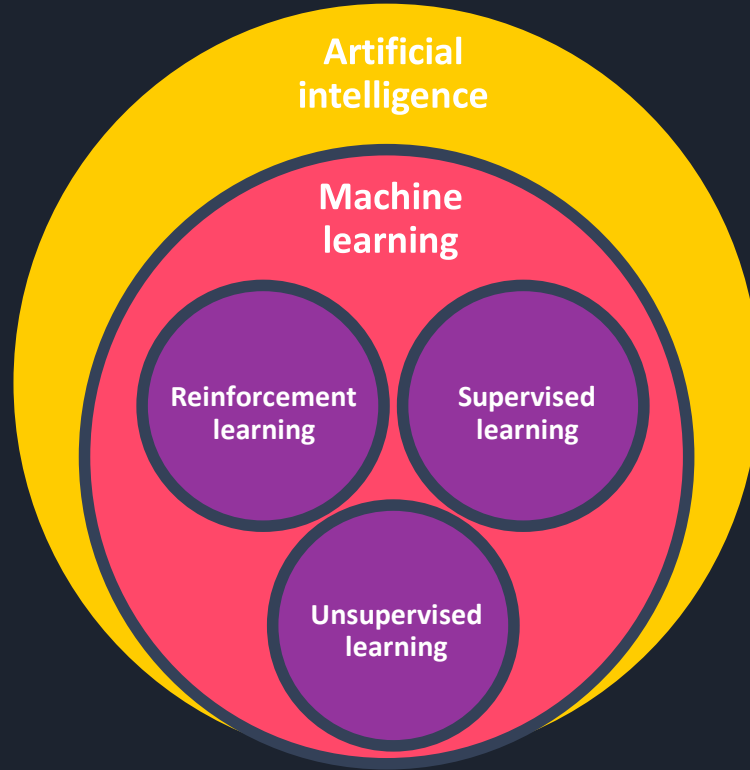
# Our mission at AWS

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Put machine learning in the  
hands of every developer

# ML IN THE BROADER CONTEXT OF AI

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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

 <b>Amazon SageMaker</b>								
Ground Truth	Notebooks	Algorithms + Marketplace	Reinforcement Learning	Training	Optimization	Deployment	Hosting	

## ML Frameworks + Infrastructure

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

# Our mission at AWS

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Put machine learning in the  
hands of every developer

# HOW I STARTED A CAREER IN MACHINE LEARNING

## NO PhD REQUIRED

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# ENABLING THE NEXT MACHINE LEARNING DEVELOPERS

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## ML learning devices

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AWS DeepRacer  
Reinforcement Learning



AWS DeepLens  
Deep Learning

## Training & Certification

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AWS ML Training and  
Certification



MOOCs

# ML LEARNING RESOURCES CENTER

[aws.amazon.com/machine-learning/learn/](https://aws.amazon.com/machine-learning/learn/)



## Get Started with Machine Learning - No PhD Required

Take your skills and career to the next level by getting started with machine learning (ML).

Whether you are looking to learn ML, hands-on, up-level your professional skill set with online courses or connect with other AWS developers, you came to the right place. Choose the path and pace that works for you.

[Choose your learning path »](#)

"I come from a regular development background, and because of AWS now I'm working in ML. I don't have a math degree. I don't have a PhD."

Alex Schultz - Machine Learning Software Engineer



## Choose your learning path

### 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 »](#)

### LEARN HANDS-ON



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

[LEARN ML THROUGH AUTONOMOUS DRIVING WITH AWS DISPLACER](#)  
[Learn more »](#)

### GET ML CERTIFIED



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 »](#)

# AWS DEEPLENS 2019 EDITION

# AWS DEEPLENS

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

[aws.amazon.com/deeplens](https://aws.amazon.com/deeplens)



- Purpose-built for ML-skills development
- Fully programmable and customizable
- Build custom Amazon SageMaker models
- 10-minutes to your first deep learning project



# 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](https://amazon.ca)
  - Hallo, AWS DeepLens: [Amazon.de](https://amazon.de)
  - Hola, AWS DeepLens: [Amazon.es](https://amazon.es)
  - Bonjour, AWS DeepLens: [Amazon.fr](https://amazon.fr)
  - Ciao, AWS DeepLens: [Amazon.it](https://amazon.it)
  - こんにちは、ディープレンズ: [Amazon.co.jp](https://amazon.co.jp)
  - Good day, AWS DeepLens: [Amazon.co.uk](https://amazon.co.uk)
  - Howdy, AWS DeepLens: [Amazon.com](https://amazon.com)
- New tutorials: construction worker safety (hard hat detection) and coffee drinking detection.



# 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
- cIDNN 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**

# 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



# DEVELOPER USE CASES

<https://aws.amazon.com/deeplens/community-projects>



## 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

# ENTERPRISE USE CASES

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“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 Rasoulia VP, Global Connectivity of Carnival.***



# AWS DEEPRACER

# AWS DEEPRACER

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

[aws.amazon.com/deepracer](https://aws.amazon.com/deepracer)



# AWS DEEPRACER

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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

# AWS DEEPRACER LEAGUE

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The World's First Global, Autonomous Racing League  
[www.deepracerleague.com](http://www.deepracerleague.com)

2 ways to race

Virtual Circuit

Summit Circuit




Prizes!

Win a trip to re:Invent!

Win a DeepRacer car

# 2019 LEAGUE RECAP – SUMMIT CIRCUIT

 solo@DNP 7.44		 Juv Chan 9.090
 astronav 7.620		 A Cloud Guru 9.35
 john@invex 7.726		 Pedro@pragsis 9.367
 Myplanet 7.851		 Rafa 9.579
 Kim Yejun 7.998		 grc8@c1 9.590
 Ray G 8.152		 Bryan 9.978
 Matt @ GJI 8.290		 Cloud Brigade 10.43
 Ray Chang 8.630		 Ryan@ACloudGuru 11.108
 Peter@IVE Cloud 8.648		 Pon Datalab 13.030
 Kevin Byun 8.715		 arthur 13.87
 Jouni @Cybercom 8.732		 Mats@ Virgin Mobile 18.078
 Roger@NCTU_CGI 8.734		 Rick Fish 51.500
 MattC 8.917		 RE:INVENT '19 TBD


21 Races. 17 countries. Thousands of developers of all skill levels.

World record of 7.44 seconds

# GET READY FOR THE 2020 LEAGUE

## Free 90 min e-learning course

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

 **training and certification**

Learning Library Certification Support Partner Training

English Sign In

**E-LEARNING**

**AWS DeepRacer: Driven by Reinforcement Learning**

**FREE COURSE**  
This course is included with Free Digital Training subscription.

**SIGN IN**

INTERMEDIATE 90 MINUTES ENGLISH

**ABOUT**

This course is designed to give you hands-on experience with reinforcement learning (RL) by helping you build, train and deploy models in AWS DeepRacer so you can compete in the official AWS DeepRacer League.

The course starts off by orienting you to AWS DeepRacer before diving into RL. You'll have several opportunities to build, train, and evaluate your own RL models, and then deploy them to the physical car.

By the end of the course, you'll have your own optimized RL model that you can enter into a virtual or physical circuit of the AWS DeepRacer League.

**LANGUAGES AVAILABLE**

This training is also available in other languages. Click the links below to register for this training in your preferred language.

[Japanese](#)

## Get your own set of wheels

<https://www.amazon.com/dp/B07JMHKQGG>

 **amazon prime**

Amazon Devices


Deliver to AWS Seattle 98101

Whole Foods Your Pickup Location Browsing History Today's Deals AWS's Amazon.com Buy Again

EN Hello, AWS Account & Lists Orders Prime Cart

Amazon Devices Echo & Alexa Fire Tablets Amazon Fire TV Kindle Dash Button Home Security Device Deals Accessories Certified Refurbished Device Support Manage Your Content and Devices

**The Halloween Store** Shop candy, costumes, and more



**AWS DeepRacer – Fully autonomous 1/18th scale race car for developers**  
by Amazon Web Services  
22 answered questions

**Price: \$399.00** Prime FREE Delivery

Get \$70 off instantly: Pay \$129.00 ~~\$499.00~~ upon approval for the Amazon Prime Rewards Visa Card. No annual fee.

**FREE delivery: Jan 21 - 22** Details

Deliver to AWS - Seattle 98101

**Extended delivery time:** This item is subject to shipping restrictions due to materials in its composition.

**In stock on January 16, 2020.**

Order it now.

Ships from and sold by Amazon Digital Services LLC.

- AWS DeepRacer is the fastest way for developers to get rolling with machine learning, literally. Get hands-on with a fully autonomous 1/18th scale race car driven by reinforcement learning, 3D racing simulator, and a global racing league.
- Car - AWS DeepRacer is an autonomous 1/18th scale race car designed to test

Click image to open expanded view

Qty: 1

**Add to Cart**

**Buy Now**

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**Add to your Dash Buttons**

**Other Sellers on Amazon**

**New (1)** from \$399.00 **prime**



# 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.



# AWS Machine Learning Training and Certification



# AWS ML TRAINING AND CERTIFICATION

The same ML courses used to train engineers at Amazon are available for free

[aws.training/machinelearning](https://aws.training/machinelearning)



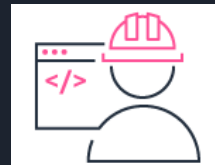
Business  
Decision  
Makers



Developers



Data Scientists

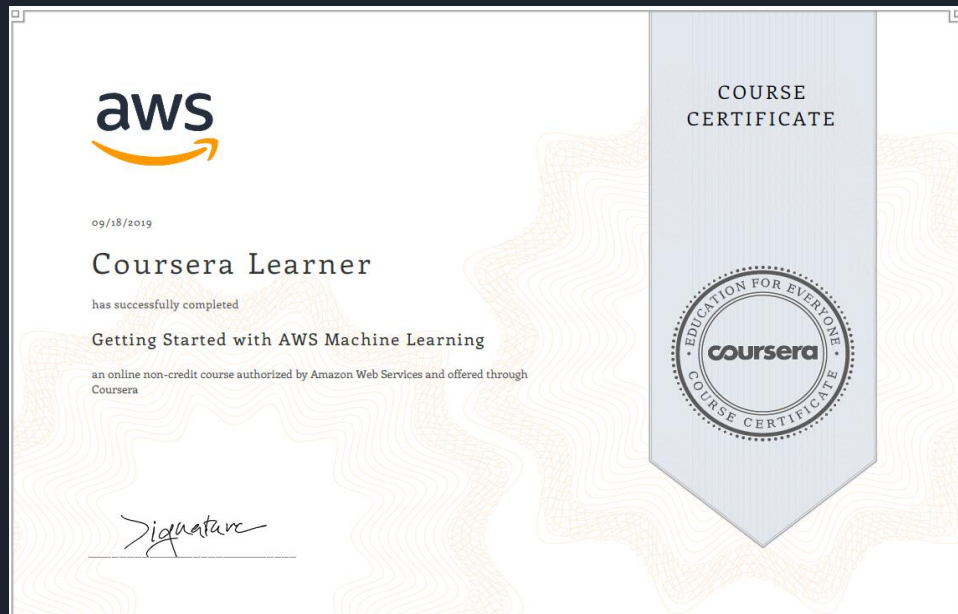


Data Platform Engineers

- **LIVE NOW:** 30+ digital courses with 45+ hours of content for learners at all levels
- Get certified: When ready, validate your expertise with an industry-recognized credential
- Join the AWS Certified global community: earn digital badges, special event access, and other benefits

# GETTING STARTED WITH AWS MACHINE LEARNING

<https://www.coursera.org/learn/aws-machine-learning>



- Read and view the course content for free
- If you want to access assessments, take graded assignments, and get a post course certificate, for \$49 in the USA and \$29 in Brazil, Russia, Mexico, and India

# CHOOSE YOUR ML LEARNING PATH

[aws.amazon.com/machine-learning/learn](https://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



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### LEARN ML THROUGH 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



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### 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](https://aws.amazon.com/machine-learning/learn)

Thank you!