SEOUL

19.09.26

DEV DAY

aws

DEV DAY
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모두를 위한 컴퓨터 비전 딥러닝 툴킷, GluonCV 따라하기

3. AWS DeepLens

김무현 데이터 사이언티스트
Amazon Machine Learning Solutions Lab

aws

AWS DeepLens
is not a
video camera ...

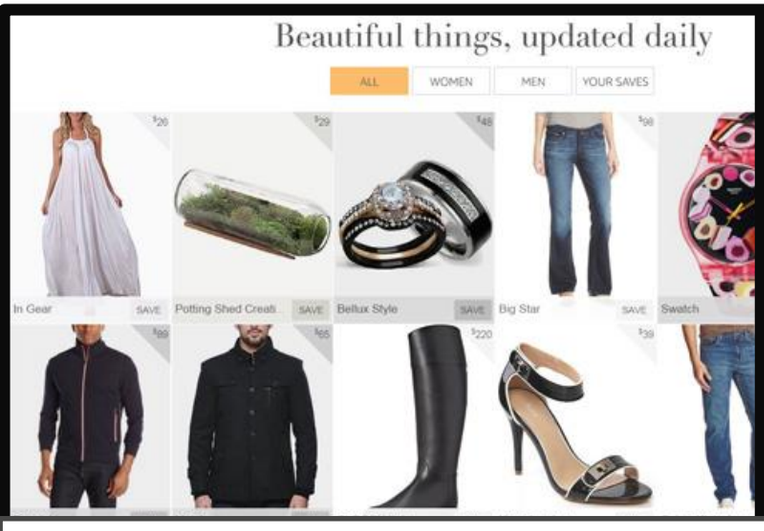
It's the
world's first
deep learning-enabled
developer kit

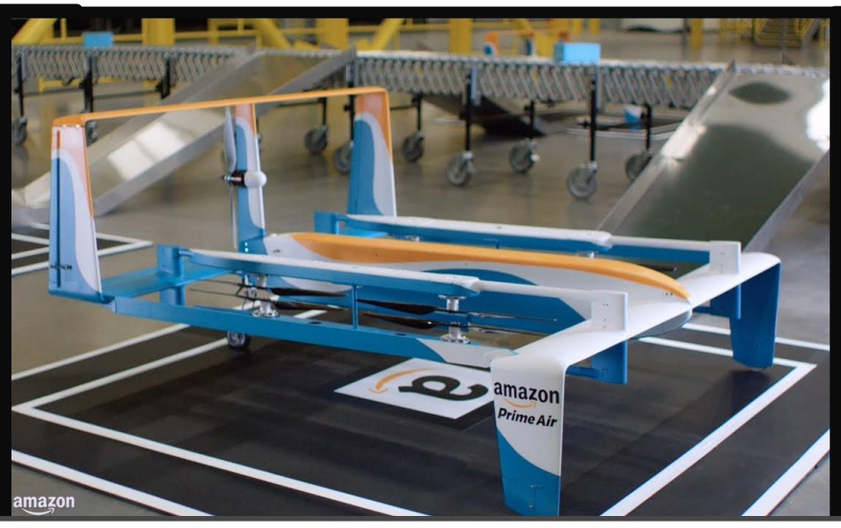
intel inside™

aws

AWS DeepLens Specifications

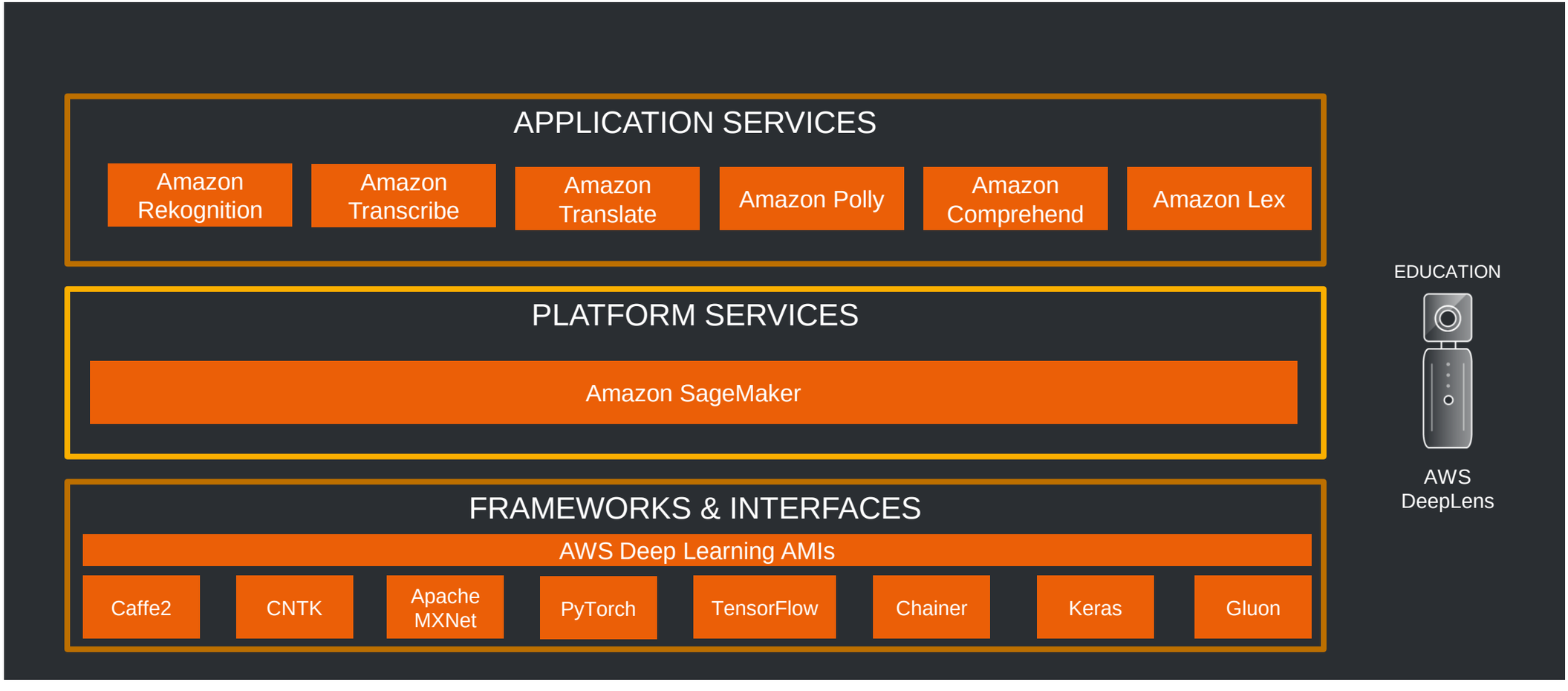
- Intel Atom Processor
- Gen9 graphics
- Ubuntu OS- 16.04 LTS
- 100 GFLOPS performance
- Dual band Wi-Fi
- 8-GB RAM
- 16-GB storage (eMMC)
- 32-GB SD card
- 4 MP camera with MJPEG
- H.264 encoding at 1080p resolution
- 2 USB ports
- Micro HDMI
- Audio out
- AWS Greengrass preconfigured
- Intel clDNN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





Artificial Intelligence at Amazon


The Amazon Machine Learning Stack



Get Started with Sample Projects

HOT DOG / NOT HOT DOG

OBJECT DETECTION

FACE DETECTION

ACTIVITY DETECTION

HEAD POSE DETECTION

ARTISTIC STYLE TRANSFER

CAT VS. DOG

Or build **custom** deep learning models in the cloud using

Amazon SageMaker

aws

Today We Will Cover

1. Machine learning overview

2. Deploy out-of-box model to AWS DeepLens

3. Training a model in Amazon SageMaker

4. Extending a project

AWS Lambda

Amazon S3

Amazon Rekognition

aws

Please Note:

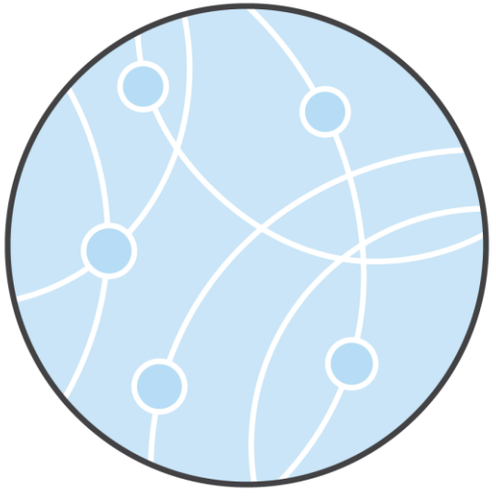
Keep your laptops closed…. And please don’t touch the AWS DeepLens device just yet!

We’re going to use the **AWS DeepLens** connected to the Ethernet and the workshop monitor / keyboard / mouse for this lab.

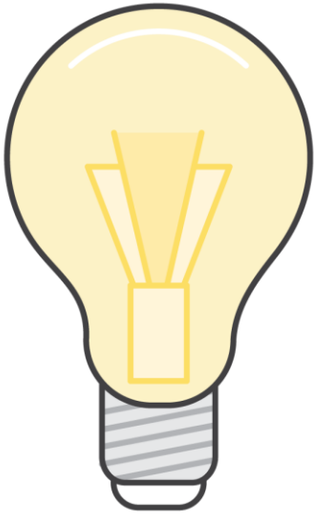
1. Machine Learning Overview

Overview of Deep Learning

Data

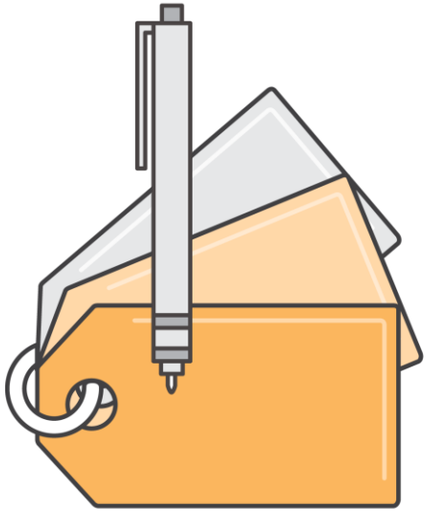


Model training

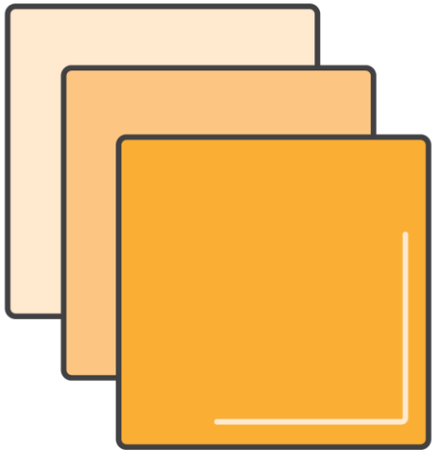


Inference

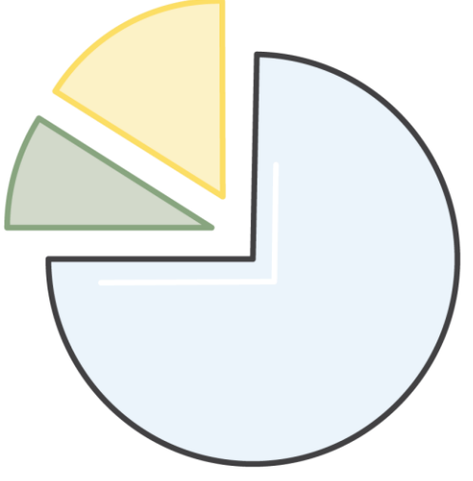
Data



Annotate



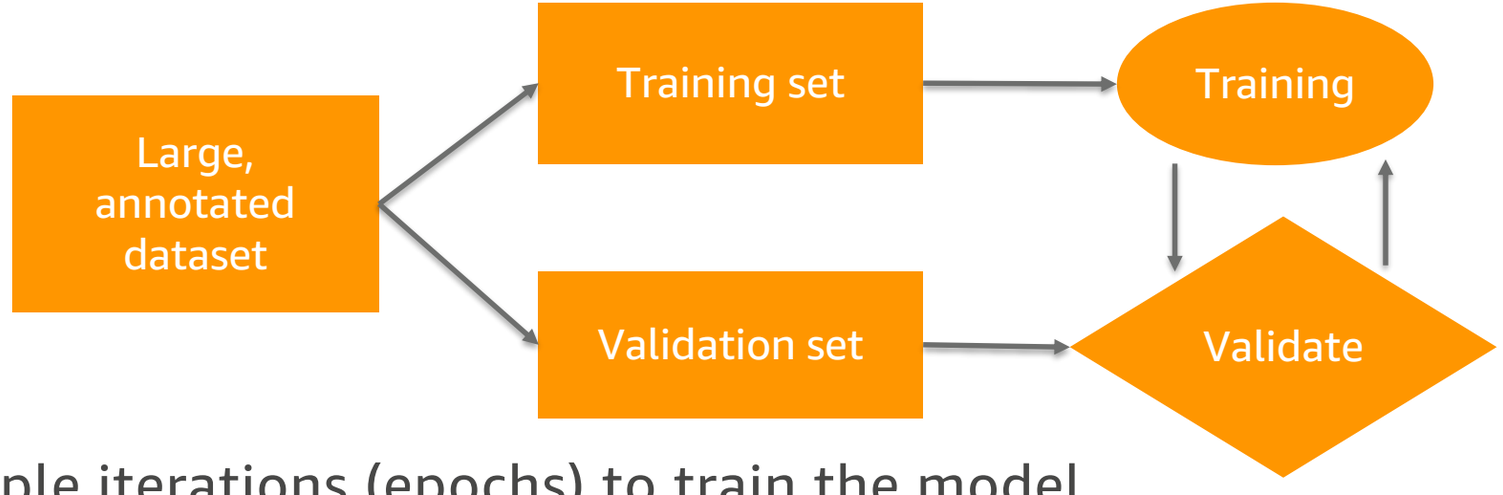
Preprocess



Data split

Model Training

- Define model architecture
- Input the annotated and cleaned data into the model



- Multiple iterations (epochs) to train the model
- Validate with held back dataset

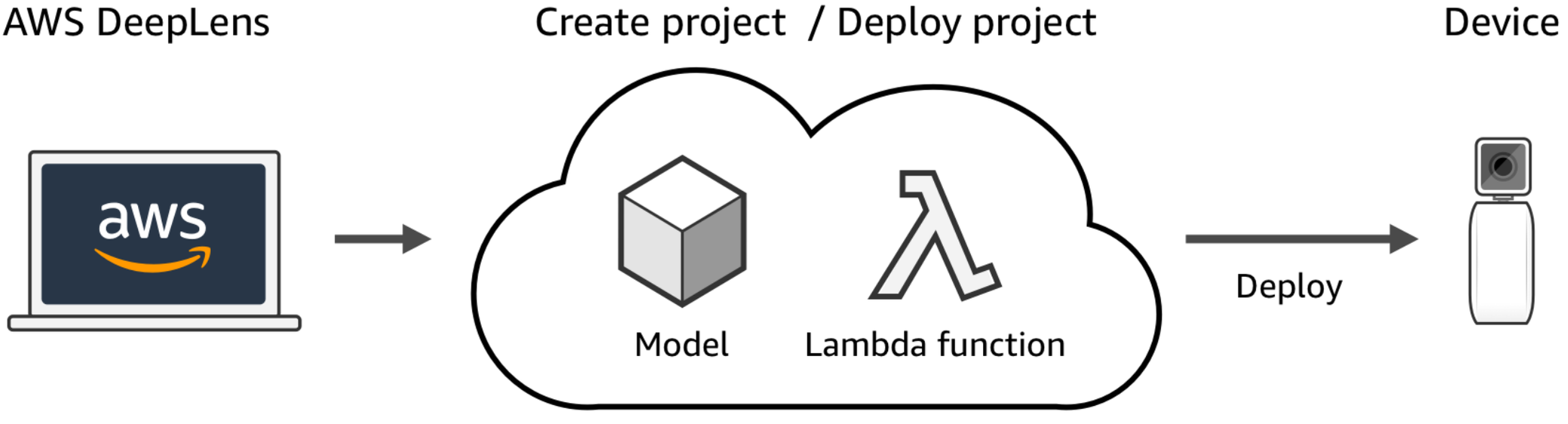
Inference

It’s where the magic happens!

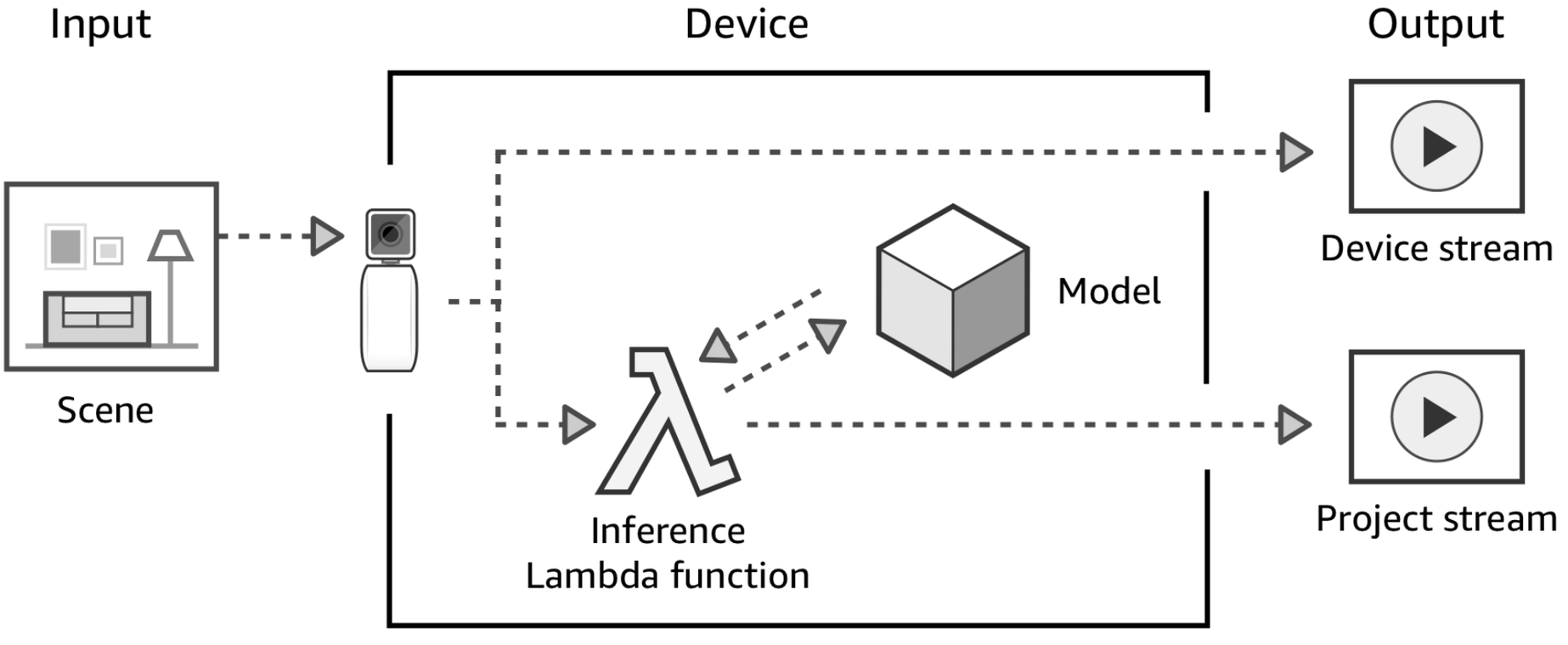
1. Preprocess the new data or image just like a training set.
2. Feed image back to the trained model to get a predicted output.

2. Deploying an out-of-box model to AWS DeepLens

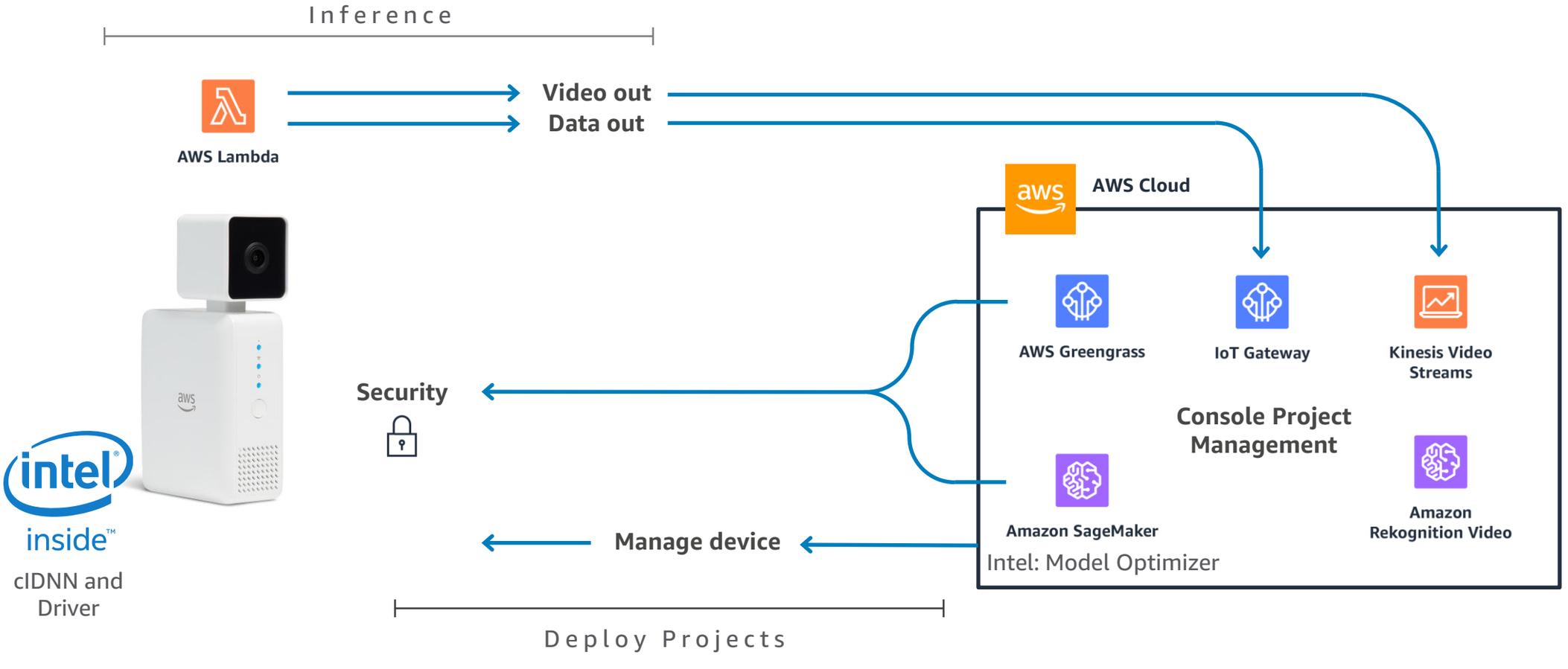
Under the Covers – Console



Under the Covers – Device



AWS DeepLens Architecture



Lab #1: Deploying a Model to AWS DeepLens

- Objective: You will learn how to deploy a model
- Time: 40 min.
- Steps:

Follow along Instructions

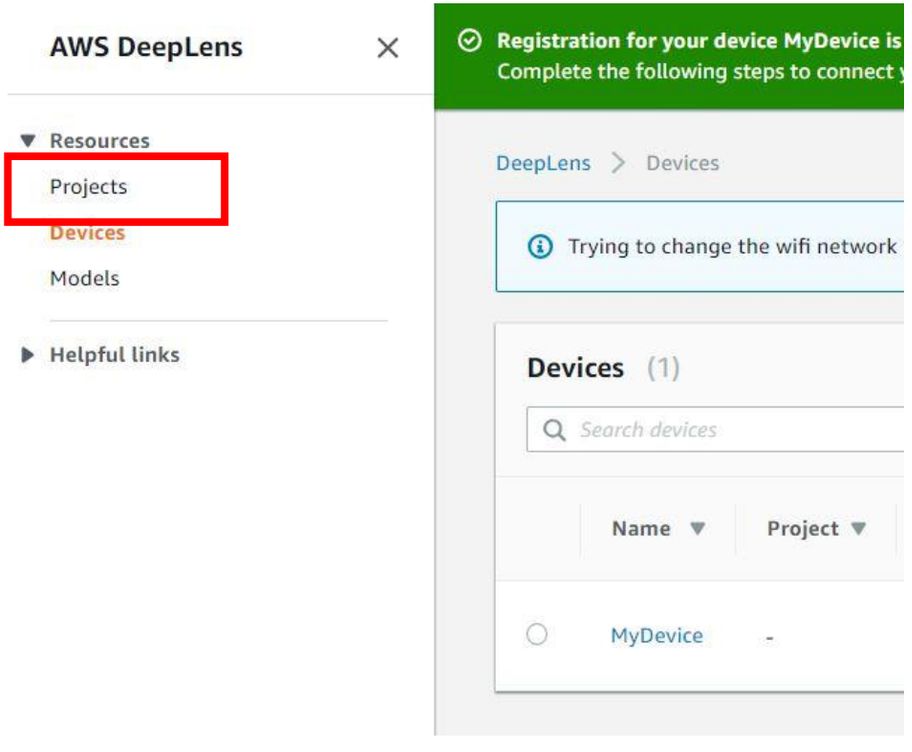
1. Find the instruction manual here:

https://github.com/mahendrabairagi/DeeplensWorkshop/

2. Select: Lab 1

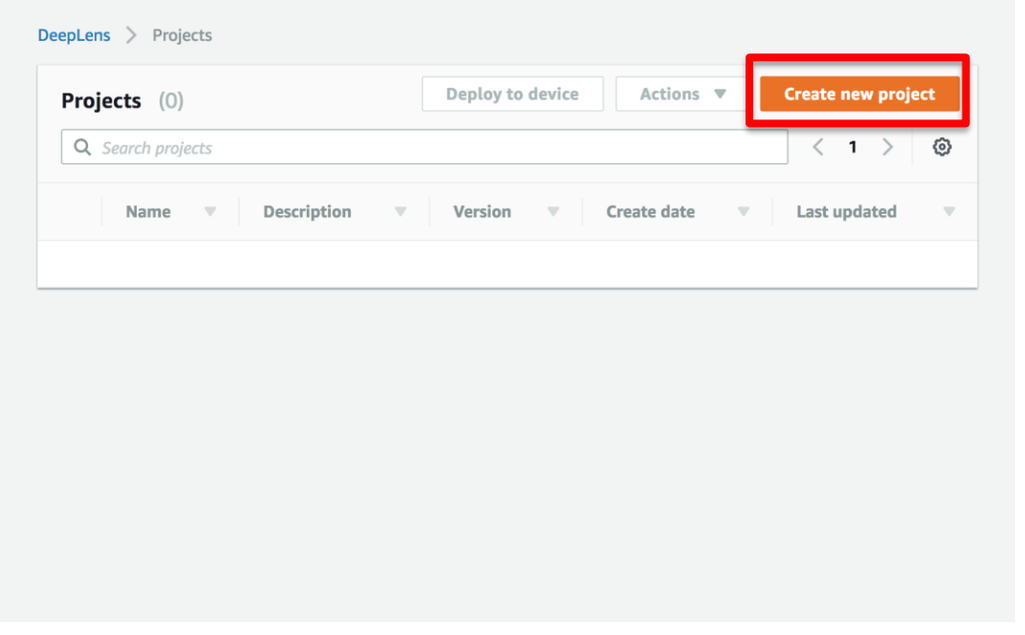
Now, It's Time to Create a Project

1. From the left navigation bar, choose **Projects**.



Now, It's Time to Create a Project

1. Choose **Create new project**.

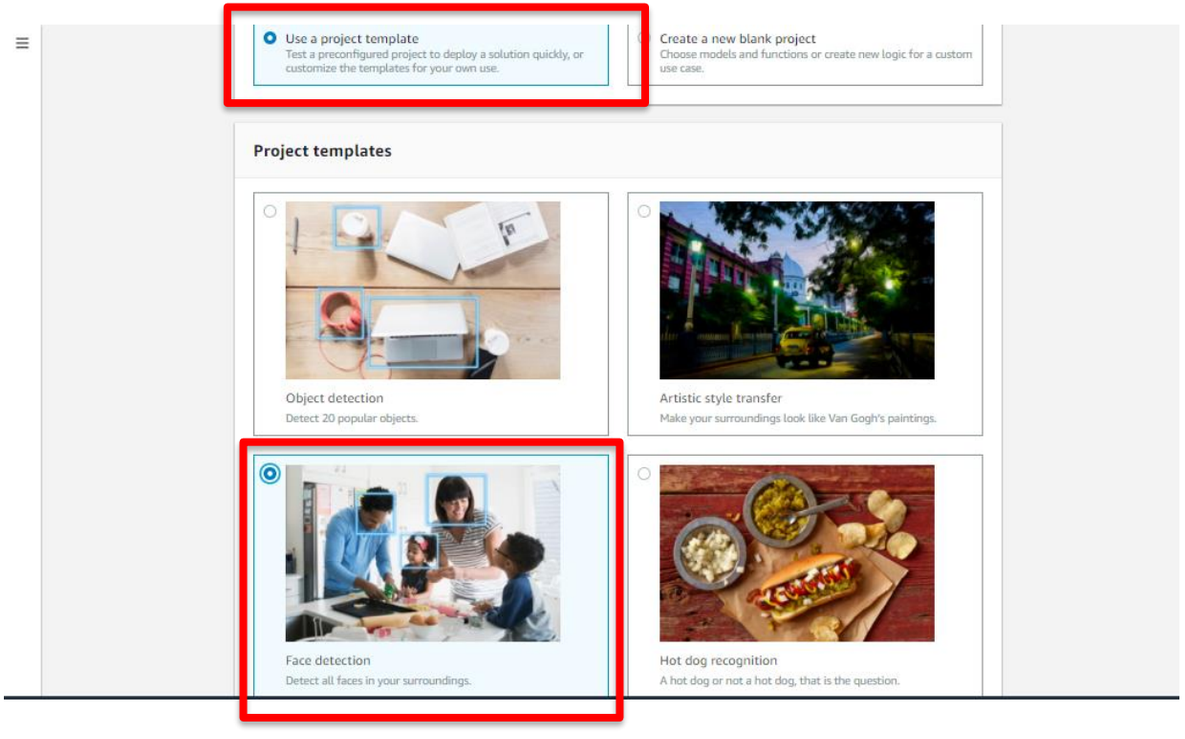


Use a Face Detection Sample

3. Choose **Use a project template**.

4. Choose **Face detection** from sample project templates.

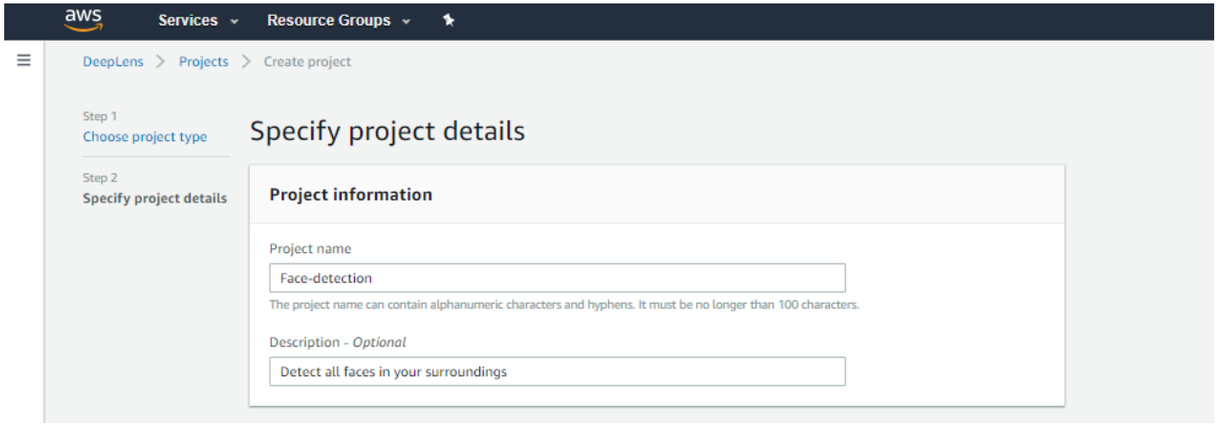
5. Choose **Next** at the bottom of screen.

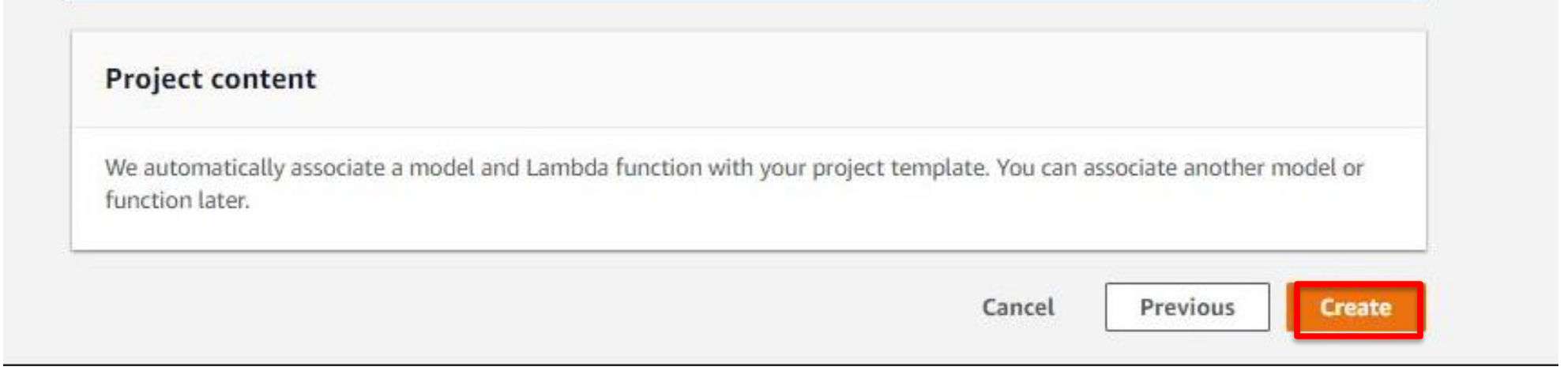


Create a Project

6. Choose **Create**.

It will take a few minutes to create the project.



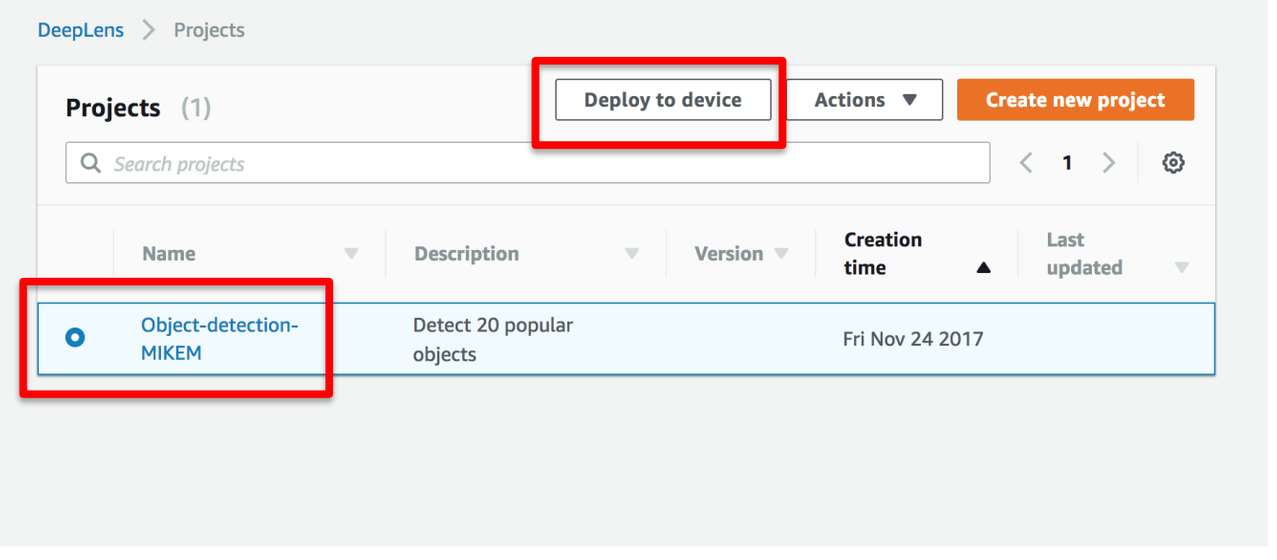


Deploy Project to the Device

7. Find your project in the list (the one you just named).

8. Choose the radio button.

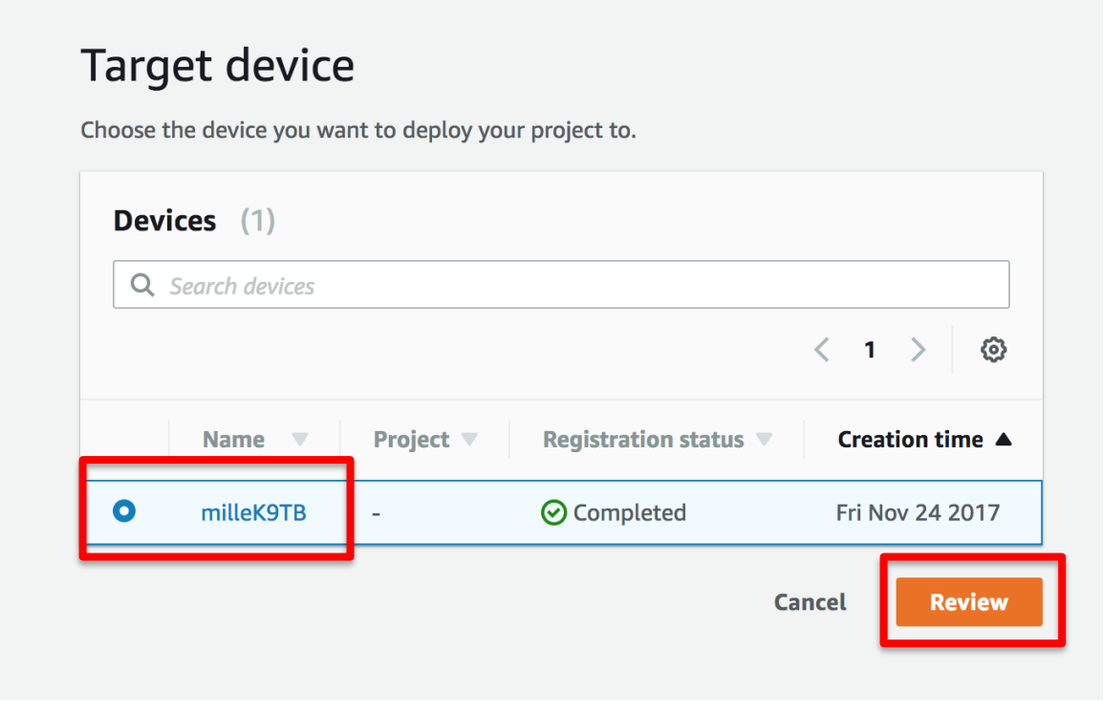
9. Choose **Deploy to device**.



Target Your Device

10. Select your device.

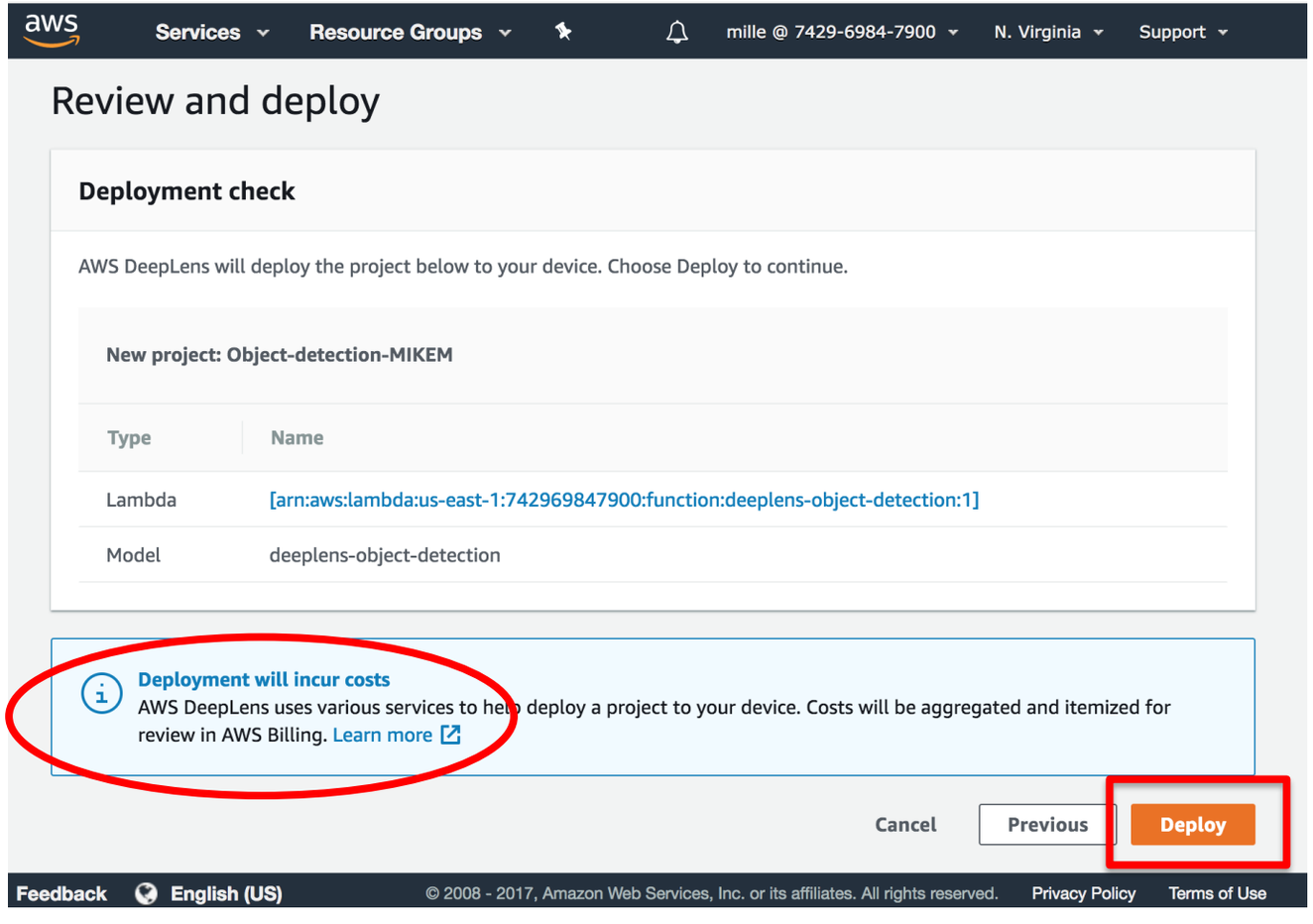
11. Choose **Review**.



Deploy!

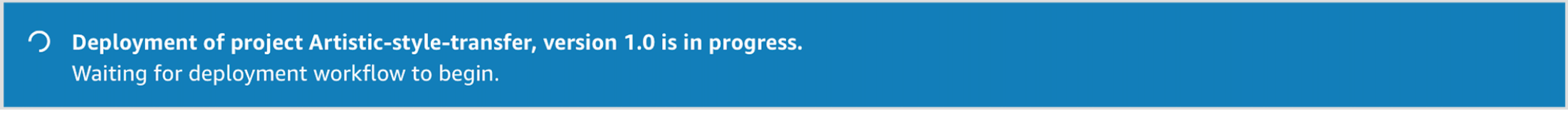
12. Choose **Deploy**.

A note on costs …

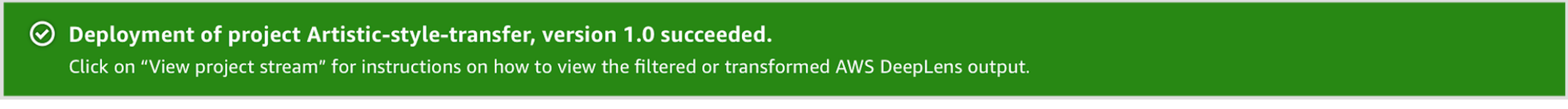


Wait for the Project to Be Deployed

Blue banner = Deployment in progress



Green banner = Deployment successful



Let's View the Output

You can view the output over the terminal or on the browser.
For the workshop, we will view the output over terminal

1. Open Terminal on Ubuntu desktop (on the desktop, choose the top left button and search for terminal).

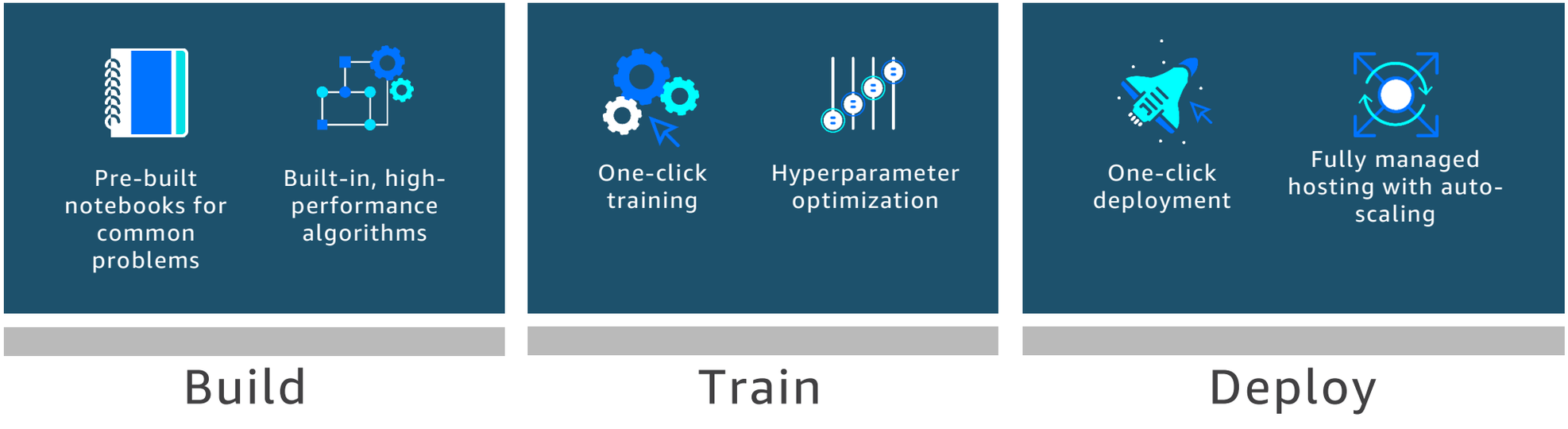
2. Enter the following command:

```
mplayer -demuxer lavf -lavfdopts format=mjpeg:probesize=32 /tmp/results.mjpeg
```

3. Training a Model in Amazon SageMaker

What is Amazon SageMaker?

Amazon SageMaker is a fully managed platform that enables developers and data scientists to quickly and easily build, train, and deploy machine learning models at any scale.



4. Extending a Project

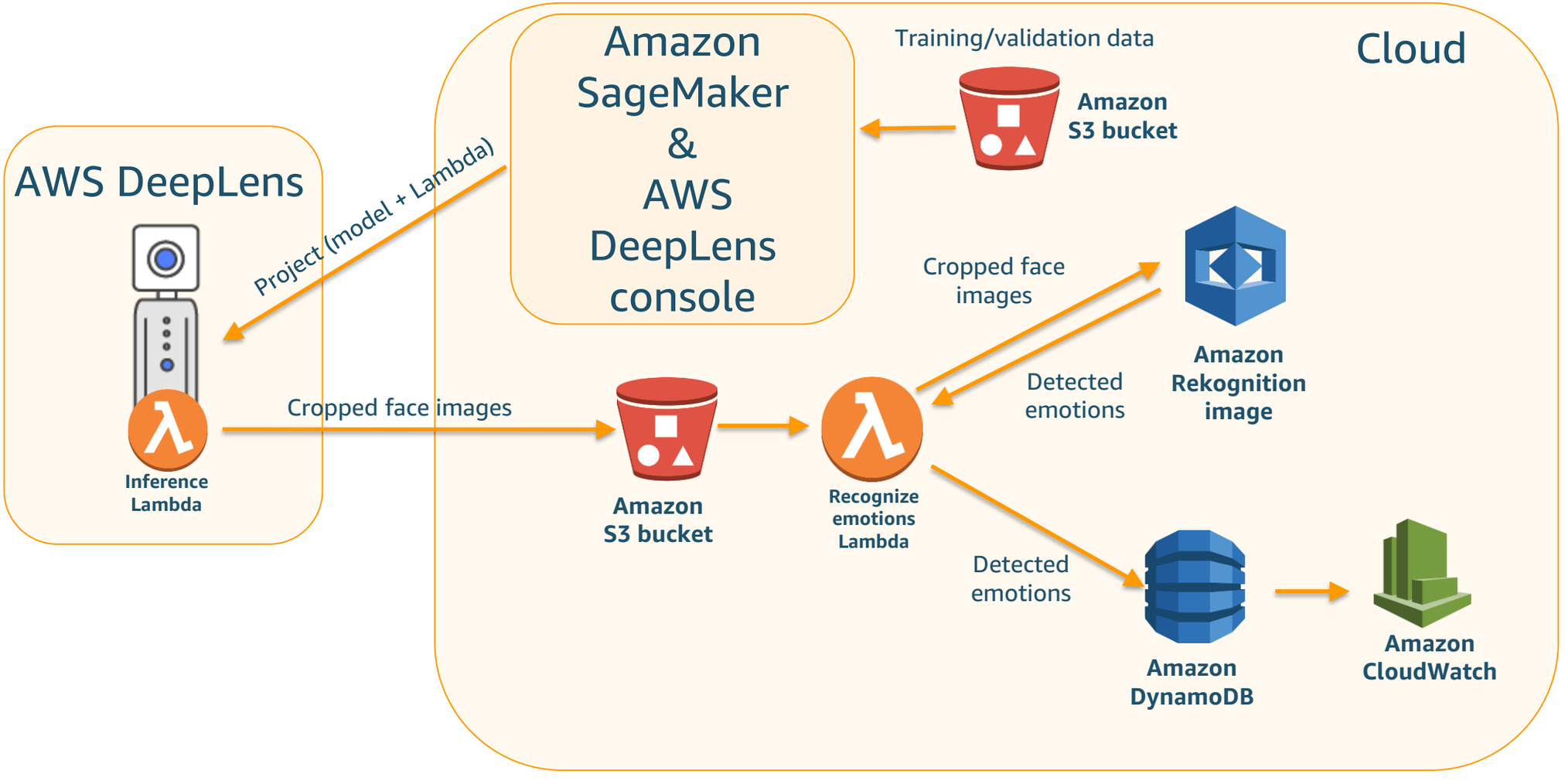
Self-Paced Lab Instructions

1. Find the instruction manual here:

https://github.com/mahendrabairagi/DeeplensWorkshop/

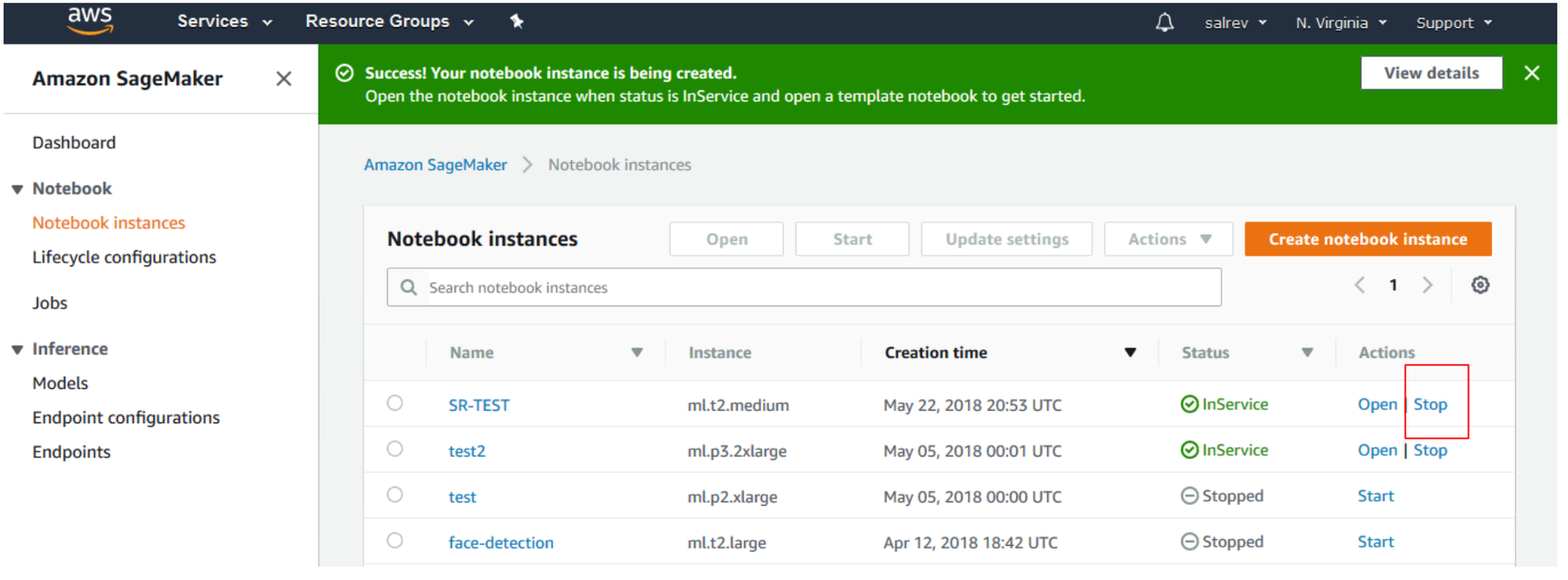
2. Choose: Lab 3

40 minutes



Important Note!

Please ensure you stop the Amazon SageMaker notebook instance to avoid ongoing charges to your AWS account.



Now, it's your turn

aws

Winners of the AWS DeepLens Hackathon

First place

ReadToMe
Created by Alex Schultz

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

Second place

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.

Third place

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.

View all 23 projects at: https://aws.amazon.com/deeplens/community-projects

Are You Ready for a Challenge?

Build machine learning projects using AWS DeepLens, and make a difference!

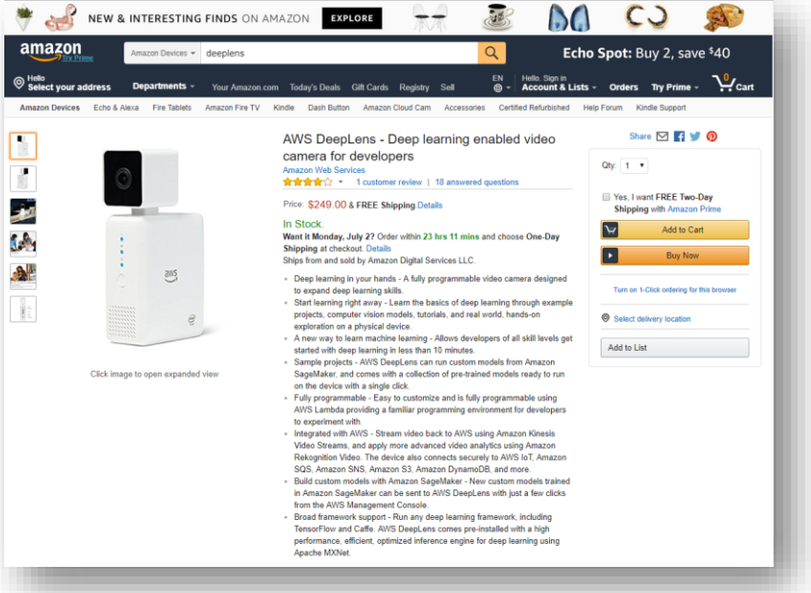
- **What is it:** Eight themed challenges that will each run for two weeks, you have the opportunity to combine your ideas with the capability of AWS DeepLens to create machine learning projects that can have a positive impact on the world.
- **Why:** These challenges will help you gain valuable machine learning experience within a fun, collaborative, and inspiring environment. You'll be making a positive impact on improving people's lives and supporting non-profits that benefit our society.
- **When:** Challenges started on July 10 and will run though end of 2018.
- **Learn more**: https://aws.amazon.com/deeplens/challenge/

aws

Thanks & Wrap-Up

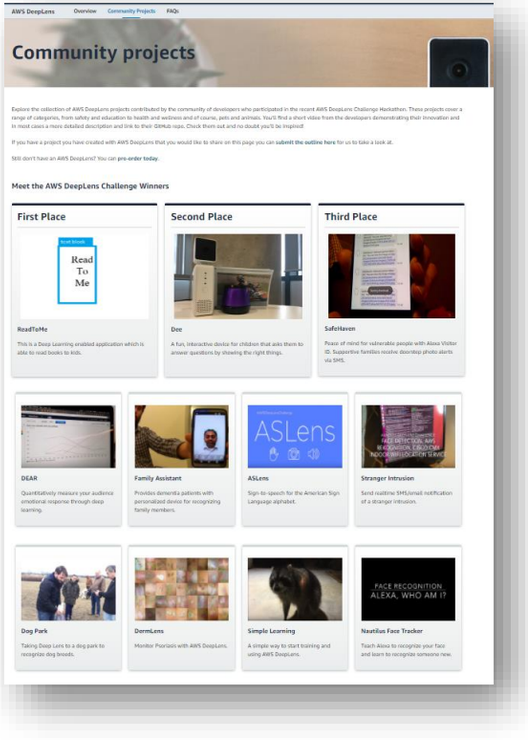
Order on Amazon.com

Search: AWS DeepLens



See what others have built

aws.amazon.com/deeplens/community-projects



Request a workshop

Work with your AWS account management team to request a hands-on Amazon SageMaker & AWS DeepLens workshop

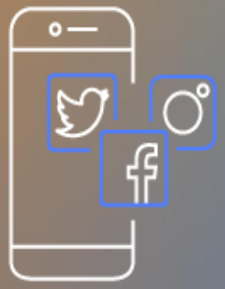
DEV DAY
SEOUL

19.09.26

여러분의 피드백을 기다립니다!

강연 평가 및 설문 조사
QR 코드를 통해 AWS DEV DAY SEOUL에 대한 여러분의 의견을 공유해주세요.
강연 평가 및 설문 조사에 참여해 주신 분께는 등록데스크에서 특별한 기념품을 드립니다.

강연 영상
AWS DEV DAY SEOUL 강연 영상은 행사 종료 후 메일로 공유드릴 예정입니다.



#AWSDEVDAYSEOUL
소셜미디어에 행사 참여 소감을 공유해주세요!

aws