Exercise: Upload and classify your images!

Lab overview:

Scenario

IBM Watson Visual Recognition (VR) is a service that uses deep learning algorithms to identify objects and other content in an image. In this hands-on lab, you will use Watson VR to upload and classify images.

Note: To complete this exercise, you will create an IBM Cloud account and provision an instance of the Watson Visual Recognition service. A credit card is NOT required to sign up for an IBM Cloud Lite account and there is no charge associated in creating a Lite plan instance of the Watson VR service.

Objectives

After completing this lab, you will be able to:

1. Access IBM Cloud
2. Add resources to your IBM Cloud account
3. Add services to your IBM Cloud account
4. Create a project in Watson Studio
5. Analyze images using Watson VR

Exercise 1: Create an IBM Cloud Account

Scenario

To access the resources and services that the IBM Cloud provides, you need an IBM Cloud account.

If you already have an IBM Cloud account, you can skip Tasks 1 and 2 and proceed with Task 3: Login to you IBM Cloud account.

Task 1: Sign up for IBM Cloud

1. Go to: <u>Create a free account on IBM Cloud</u>

2. In the **Email** box, enter your email address and then click the arrow.

3. When your email address is accepted, enter your **First Name**, **Last Name**, **Country or Region**, and create a **Password**.

Note: To get enhanced benefits, please sign up with your company email address rather than a free email ID like Gmail, Hotmail, etc.

If you would like IBM to contact you for any changes to services or new offerings, then check the box to accept the option to be notified by email.
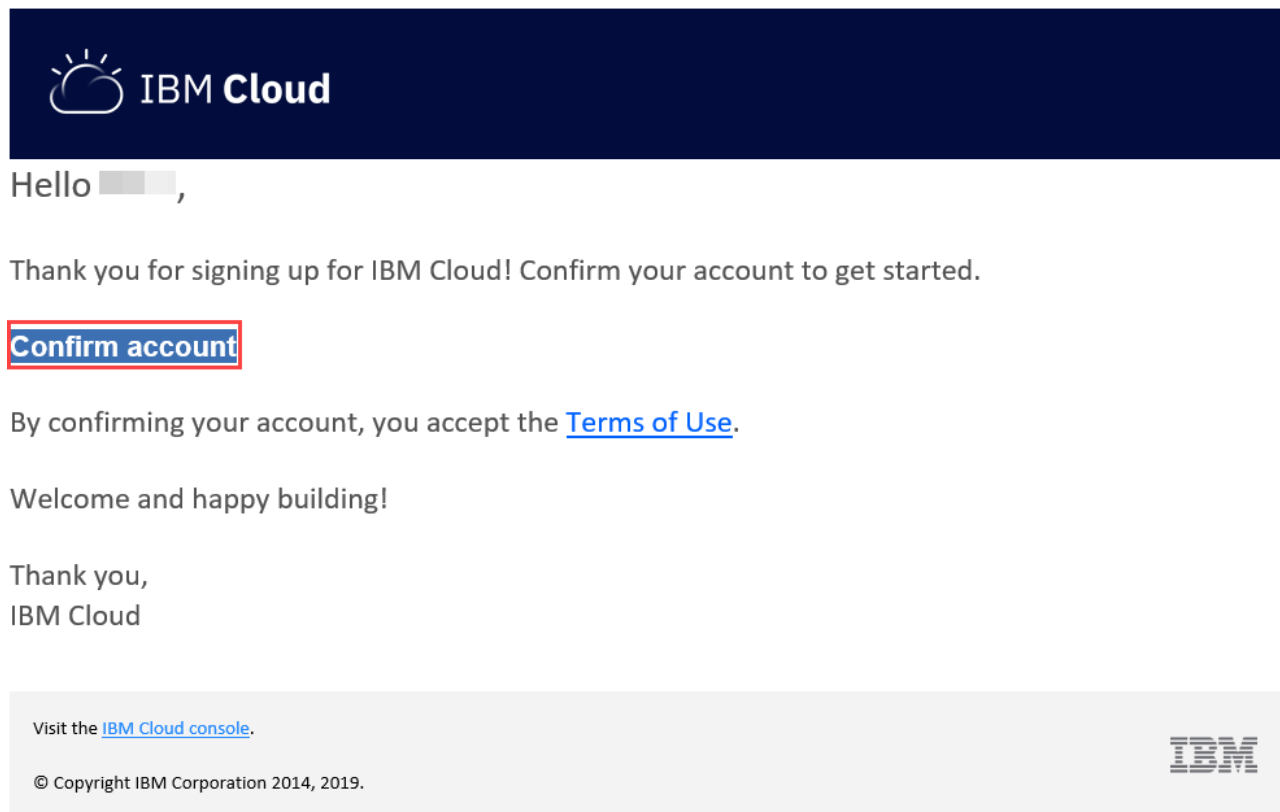
Then click **Create Account** to create your IBM Cloud account.

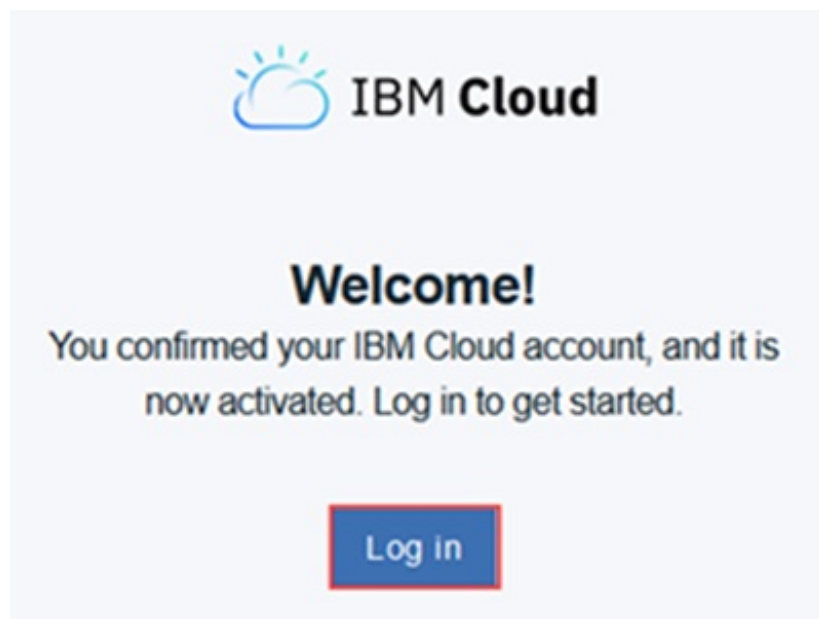## Task 2: Confirm your email address

1. An email is sent to the address that you signed up with.
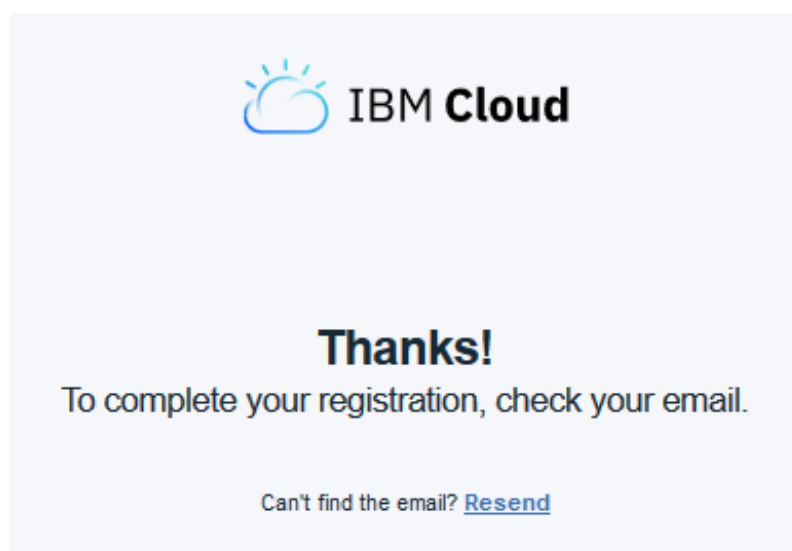
2. Check your email, and in the email that was sent to you, click **Confirm Account**.

3. You will receive notification that your account is confirmed.

Click **Log In**, and you will be directed to the IBM Cloud Login Page.

Task 3: Login to your IBM Cloud account

1. On the Log in to IBM Cloud page, in the ID box, enter your email address and then click **Continue**.

2. In the **Password** box, enter your password, and then click **Log in**.

Exercise 2: Create a Watson Studio Resource

Scenario

To manage all your projects, you will use IBM Watson Studio. In this exercise, you will add Watson Studio as a Resource.

Task 1: Add Watson Studio as a resource

1. On the Dashboard, click **Create Resource**.
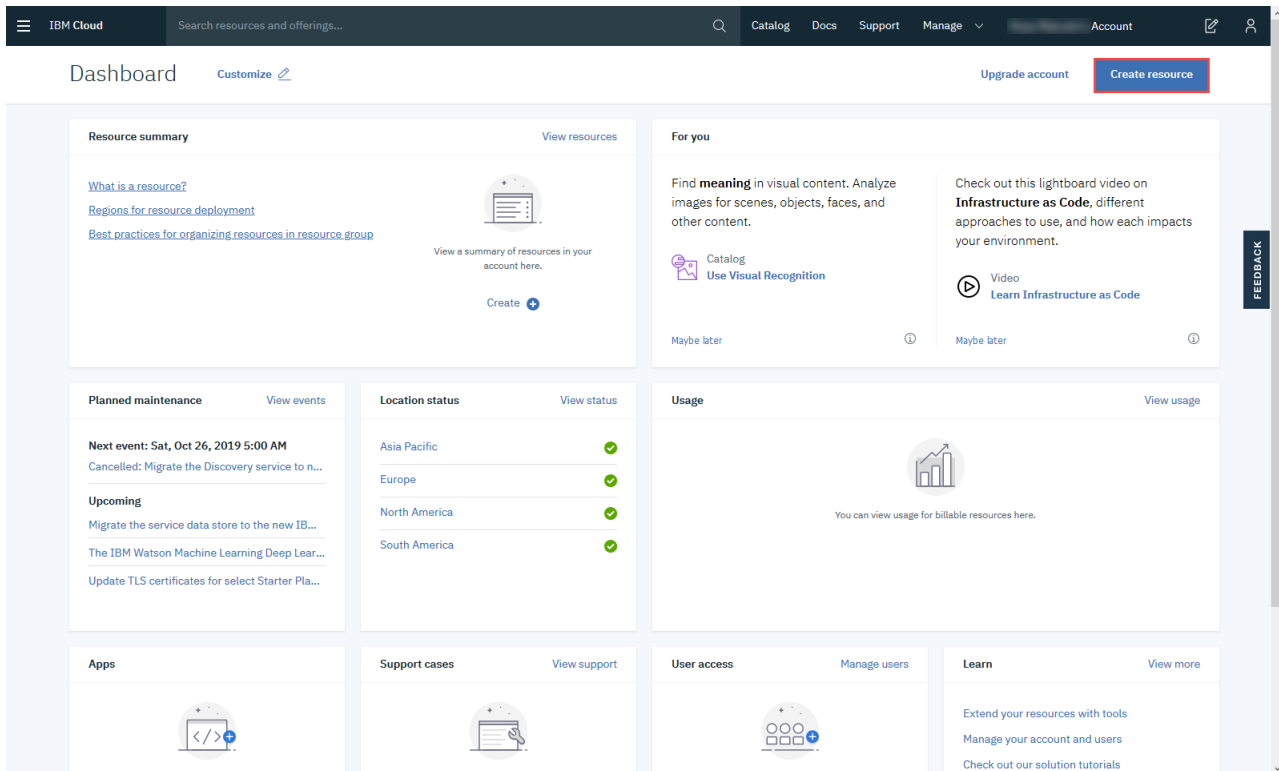
2. In the Catalog, click **AI (16)**.
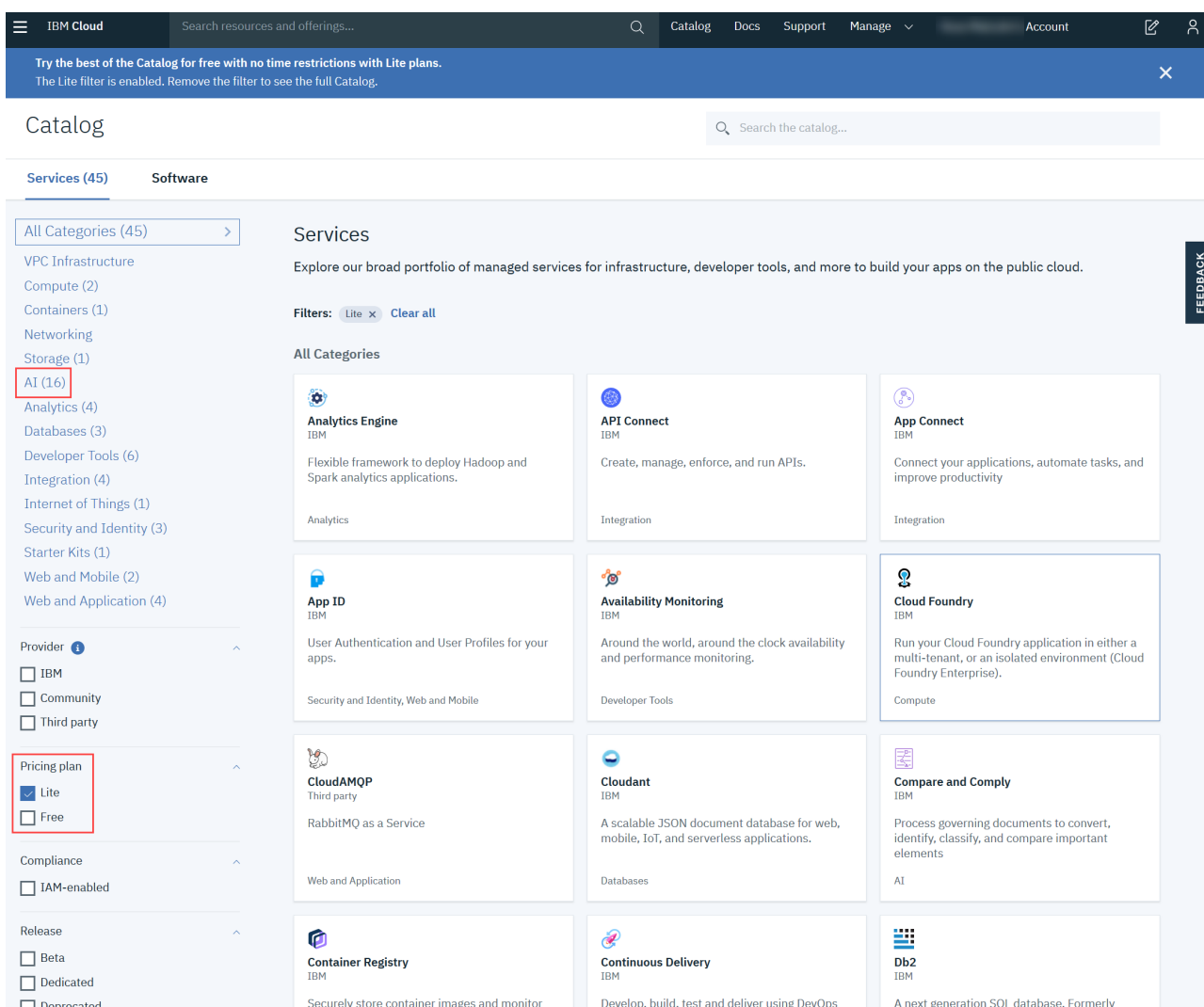
Note that the **Lite** Pricing Plan is selected.

3. In the list of **Services**, click **Watson Studio**.

4. On the Watson Studio page, select the region closest to you, verify that the **Lite** plan is selected, and then click **Create**.

5. When the Watson Studio resource is successfully created, you will see the Watson Studio page. Click **Get Started**.
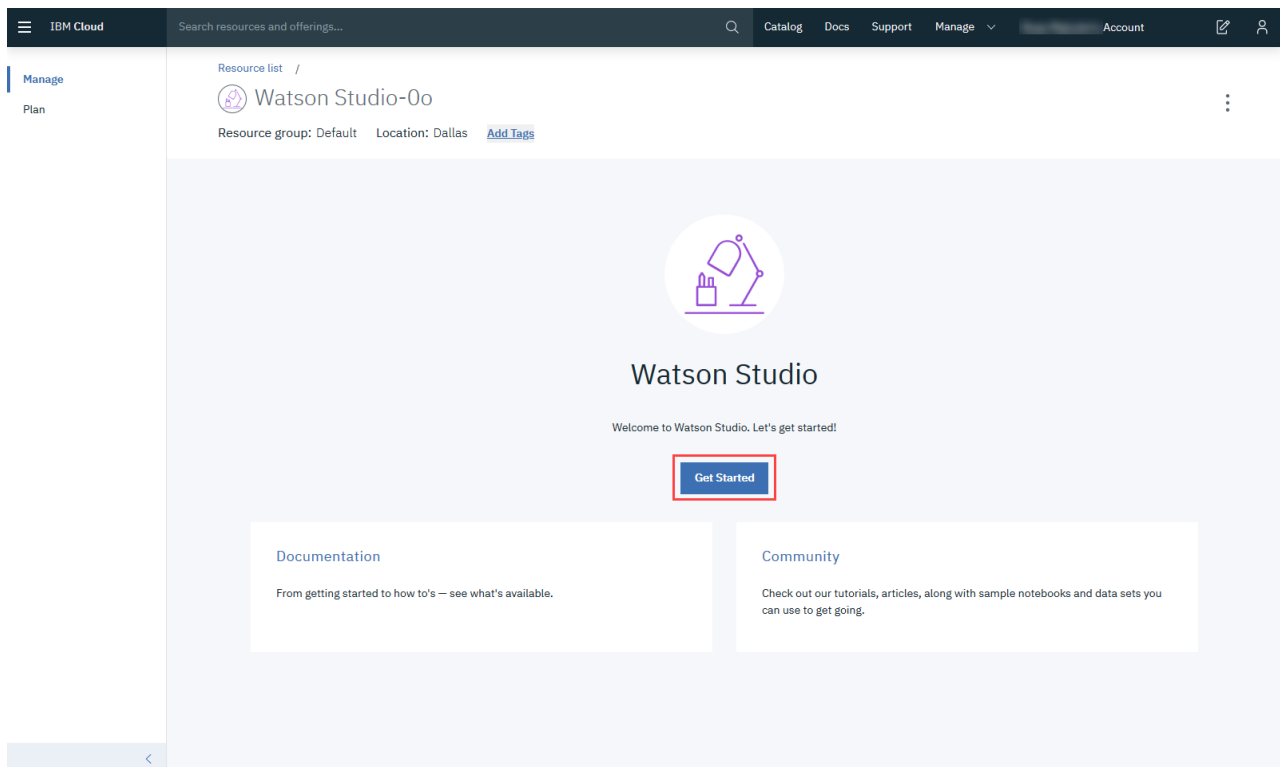
6. You will see this message when Watson Studio is successfully set up for you.
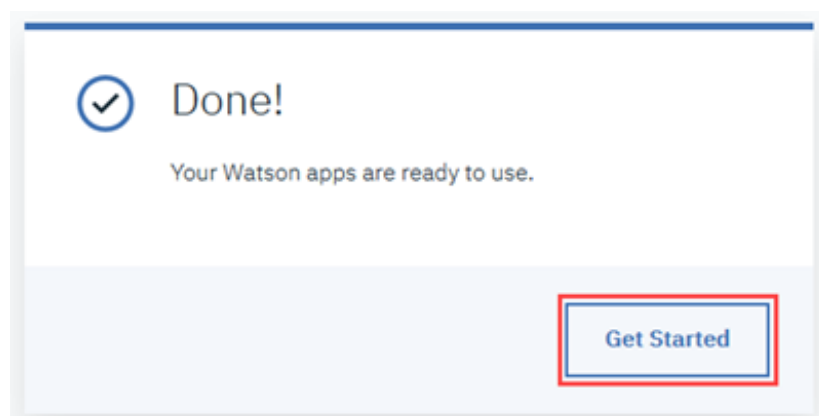
Click**Get Started**.

Exercise 3: Create a project

Scenario

To manage all the resources and services that you are working with, you should create a Watson Studio Project. You will begin by creating an empty project, and then adding the resources and services that you need.

Task 1: Create an empty project

1.On the Watson Studio Welcome page, click **Create a project**.
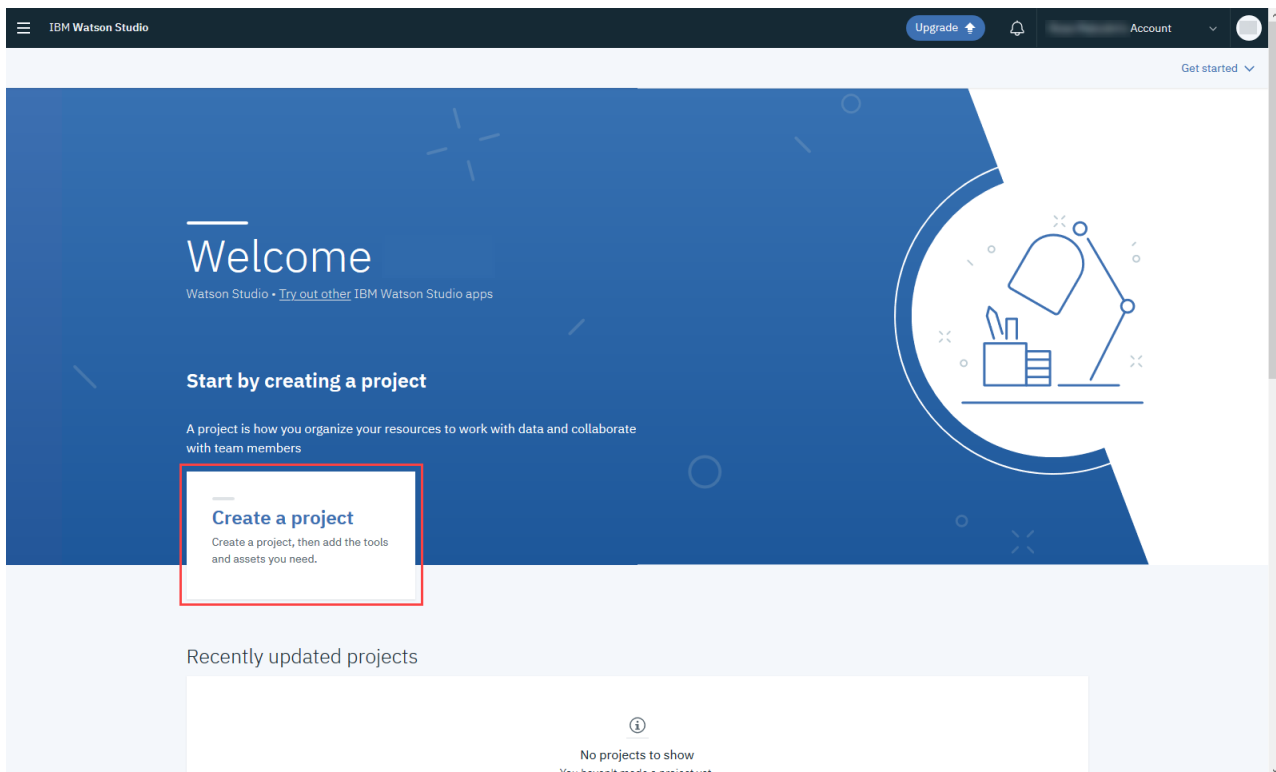
2. On the Create a project page, click **Create an empty project**.
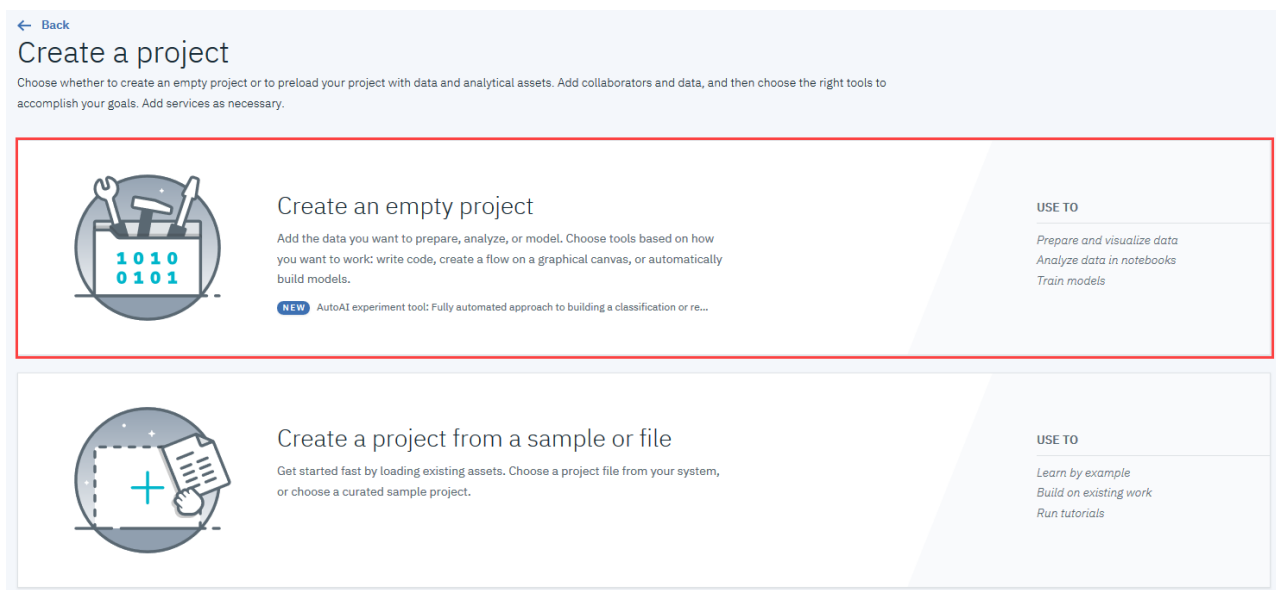
3. On the New project page, enter a **Name** and **Description** for your project.

4. You must define storage for your project before you can create it. Under **Select storage service**, click **Add**.

5. On the Cloud Object Storage page, verify that **Lite** is selected, and then click **Create**.

6. In the Confirm Creation box, click **Confirm**.

7. On the New project page, under **Define storage**, click **Refresh**, and then click **Create**.

Exercise 4: Add a Watson VR Service instance

Scenario

This project will focus on analyzing images, so you need to add the Watson Visual Recognition Service. You will also need some images to analyze, so follow the setup steps below to ensure you are prepared.

Setup

Before you begin this exercise, you must complete the following steps:

1. Collect a set of at least 20 images. You can use your own images, or download them from the internet.
2. Store the images in an easy to find location.

Task 1: Add the Visual Recognition Service

1. To add services to the project, click **Add to project**.
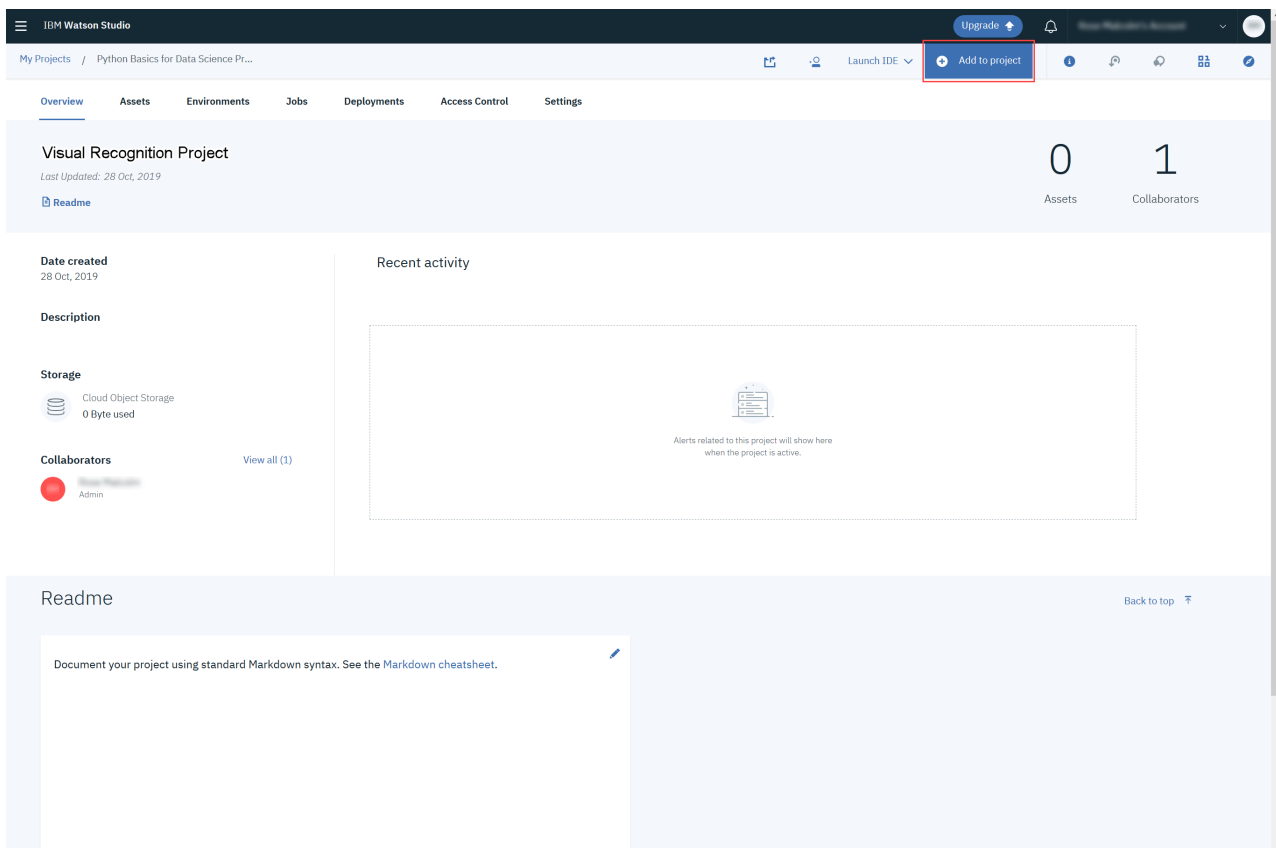
2. In the Choose asset type box, click **Visual Recognition**.
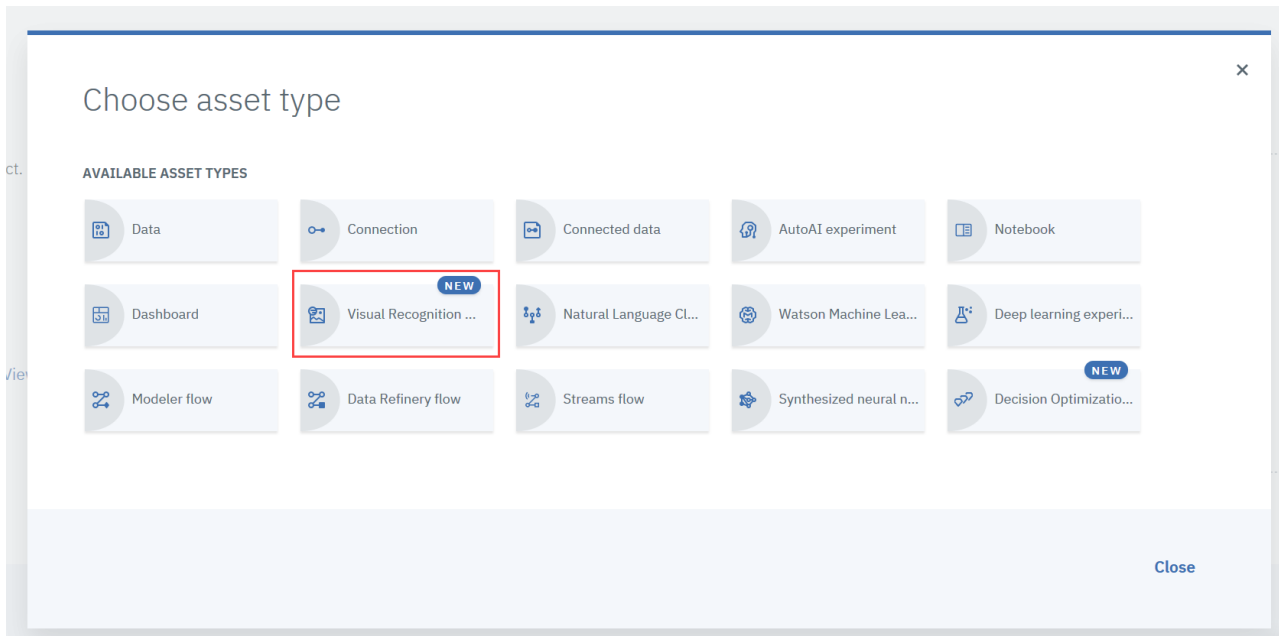
3. In the Associate a service box, click **here**.
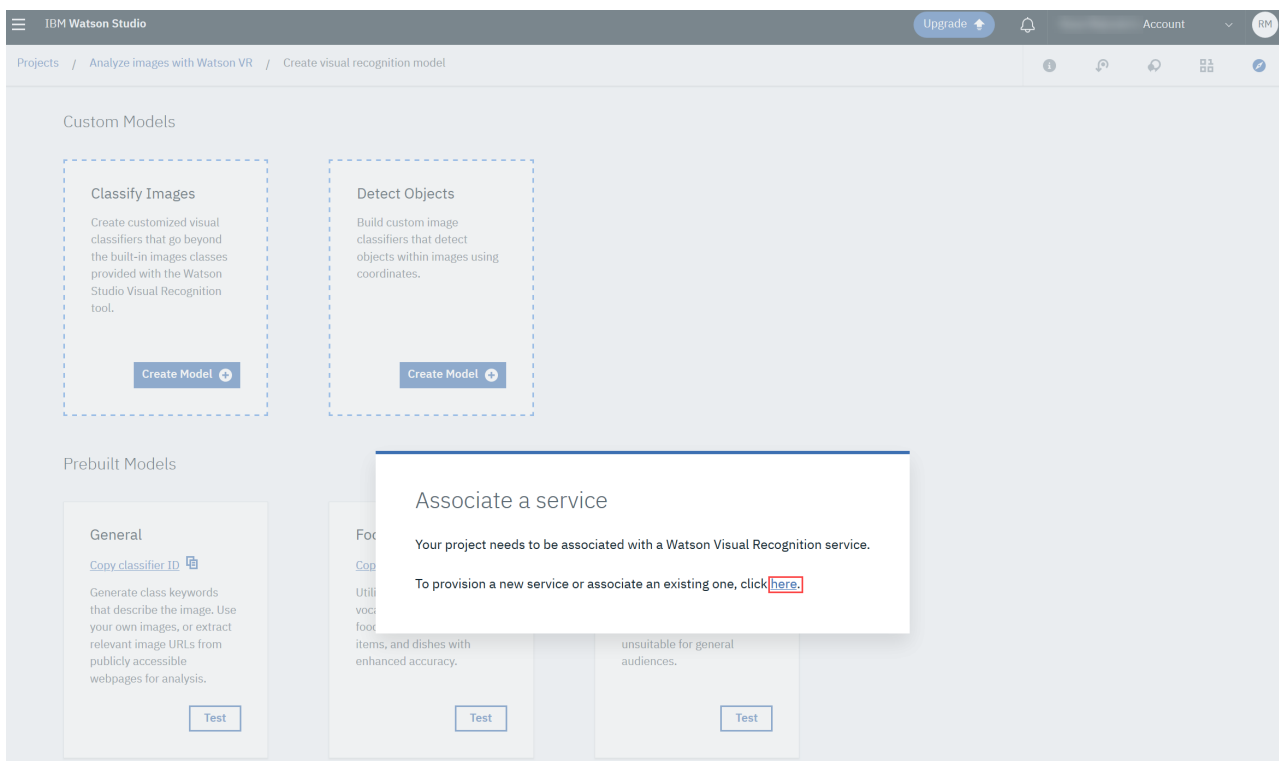
4. On the Visual Recognition page, verify that **Lite** is selected, and then click **Create**.

Visual Recognition

Existing   New

Visual Recognition

Find meaning in visual content! Analyze images for scenes, objects, and other content. Choose a default model off the shelf, or create your own custom classifier. Develop smart applications that analyze the visual content of images or video frames to understand what is happening in a scene.

Features

General Model
Generate class keywords that describe the image. Use your own images, or extract relevant image URLs from publicly accessible webpages for analysis.

Food Model
Utilize a specialized vocabulary of over 2,000 foods to identify meals, food items, and dishes with enhanced accuracy.

Custom Model
Create custom, unique visual classifiers. Use the service to recognize custom visual concepts that are not available with general model.

Explicit Model
Assess whether an image contains objectionable or adult content that may be unsuitable for general audiences.

Pricing Plan: Monthly Process shown above reflect the: **United States**

PLAN	FEATURES	PRICING
○ Lite	**1,000 Events per month towards:** Pre-trained model classification (General, Food, Explicit) (images) Custom Model classification (images) Custom Model training (images) 2 Custom Models 1 Lite Plan instance per IBM Cloud Organization Free Exports to Core ML The Lite Plan gets you started with 1,000 events (images) per month and the ability to train two Custom Models. Users wishing to use more premium features or increase usage must upgrade to a Standard Plan or a Subscription Plan.	Free
○ Standard	**Access to everything from the Lite Plan including...** Train up to 100,000 images per month (only charged if training occurs during the month) Unlimited image classifications per month (charged per image) Unlimited custom models Unlimited free exports to Core ML	Expand each section to view details

Cancel   Create

5. In the Confirm Creation box, click **Confirm**.

Confirm Creation

Region   **Plan**

Dallas   Lite

Resource group

Default

Service name

watson-vision-combined-fh

Cancel   Confirm

Task 2: Analyze images with Watson VR

1. Now you can see all the built-in image classification models that IBM Watson provides! Let's try the General model.

To analyze your images, on the Models page, under **Prebuilt Models**, in the **General** box, click **Test**.

Custom Models

Classify Images

Create customized visual classifiers that go beyond the built-in images classes provided with the Watson Studio Visual Recognition tool.

Create Model ⊕

Detect Objects

Build custom image classifiers that detect objects within images using coordinates.

Create Model ⊕

Prebuilt Models

General

Copy classifier ID 🗐

Generate class keywords that describe the image. Use your own images, or extract relevant image URLs from publicly accessible webpages for analysis.

Test

Food

Copy classifier ID 🗐

Utilize a specialized vocabulary of over 2000 foods to identify meals, food items, and dishes with enhanced accuracy.

Test

Explicit

Copy classifier ID 🗐

Assess whether an image contains objectionable or adult content that may be unsuitable for general audiences.

Test

2. On the General page, click the **Test** tab.

General

Associated Service : watson-vision-combined-ey

Overview   Test   Implementation

Summary   🔍 Search Summary

Model ID	default 🗐
Status	Ready
Explanation	Generate class keywords that describe the image. Use your own images, or extract relevant image URLs from publicly accessible webpages for analysis.

3. To upload images, on the Test tab, click **Browse**.

General

Associated Service : watson-vision-combined-ey

Overview   **Test**   **Implementation**

Filter

Threshold   0.0

0 ———●———————— 1

Class

Drop image files here to let the classifier analyze them or browse to select files.

4. Select the images you want to upload and then click **Open**.
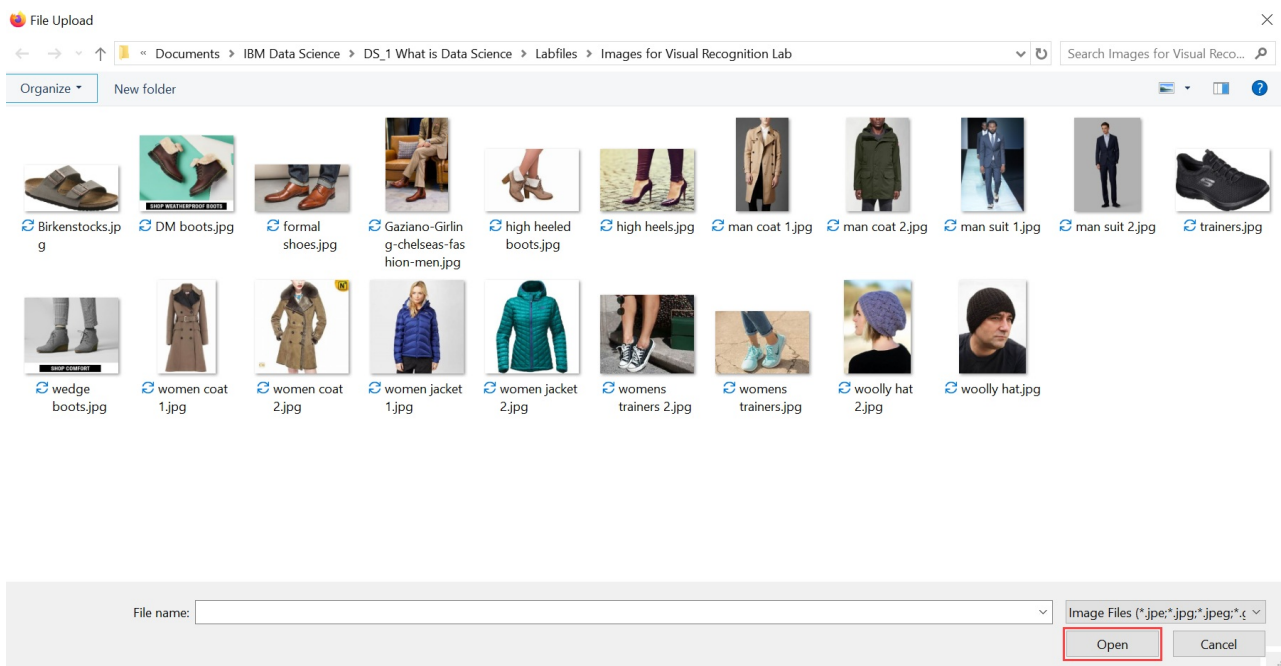
5. Once you have uploaded your images, Watson Studio Visual Recognition will tell you what it thinks it found in your images! Beside each class of object (or color, age, etc.), it gives you a confidence score (between 0 and 1) showing how confident it is that it found that particular object or feature in your image (0 for lowest confidence and 1 for highest confidence).

General

Associated Service : watson-vision-combined-ey

Overview   **Test**   Implementation

Filter

Threshold   0.0

0 ●————————————— 1

Class

☐ accessory
☐ arctic shoe
☐ armchair
☐ ash grey color
☐ beanie
☐ beige color
☐ belt
☐ beret
☐ black tie
☐ blucher shoes
☐ bomber jacket
☐ boot
☐ boothose
☐ bootlace
☐ bootstrap
☐ bottle green color
☐ broadloom (carpet)
☐ Burberry (raincoat)
☐ candy
☐ cap
☐ cardigan (jacket)
☐ chair
☐ charcoal color
☐ chopine (platform) shoe
☐ claret red color
☐ clog
☐ clothing
☐ coal black color
☐ coat
☐ cowboy boot
☐ delicacy
☐ double-breasted jacket
☐ dress
☐ dress suit
☐ duffel coat
☐ easy chair
☐ espadrille shoes

✕ Clear results

Birkenstocks.jpg

beige color	0.95
footwear	0.93
shoe	0.90
sandal	0.89
tool	0.79
light brown color	0.78
clog	0.50
espadrille shoes	0.50

DM boots.jpg

SHOP WEATHERPROOF BOOTS

maroon color	0.86
light brown color	0.77
footwear	0.75
shoe	0.75
protective covering	0.60
headdress	0.59
wing tip	0.59
bootlace	0.59
saddle shoe	0.52
accessory	0.51
holster	0.51
belt	0.51
blucher shoes	0.51
nougat bar	0.50
candy	0.50
sweet	0.50
delicacy	0.50
nutrition	0.50
food	0.50

formal shoes.jpg

footwear	0.90
light brown color	0.86
protective covering	0.80
clothing	0.80
shoe	0.72
wing tip	0.69
boot	0.60
shoes	0.56
cowboy boot	0.50
beige color	0.47

high heeled boots.jpg

high heels.jpg
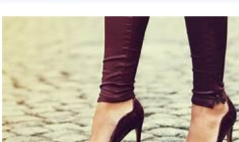
man coat 1.jpg

6. Use the check boxes on the left to filter the images. In this example, only images in which Watson VR has detected **beige color** are displayed.

General

Associated Service : watson-vision-combined-ey

Overview   **Test**   **Implementation**

Filter

Threshold   0.0

0 ●————————————— 1

Class

- ☐ accessory
- ☐ arctic shoe
- ☐ armchair
- ☐ ash grey color
- ☐ beanie
- ☑ beige color
- ☐ belt
- ☐ beret
- ☐ black tie
- ☐ blucher shoes
- ☐ bomber jacket
- ☐ boot
- ☐ boothose
- ☐ bootlace
- ☐ bootstrap
- ☐ bottle green color
- ☐ broadloom (carpet)
- ☐ Burberry (raincoat)
- ☐ candy
- ☐ cap
- ☐ cardigan (jacket)
- ☐ chair
- ☐ charcoal color
- ☐ chopine (platform) shoe
- ☐ claret red color
- ☐ clog
- ☐ clothing
- ☐ coal black color
- ☐ coat
- ☐ cowboy boot
- ☐ delicacy
- ☐ double-breasted jacket
- ☐ dress
- ☐ dress suit
- ☐ duffel coat
- ☐ easy chair

✕ Clear results

Birkenstocks.jpg

beige color	0.95
footwear	0.93
shoe	0.90
sandal	0.89
tool	0.79
light brown color	0.78
clog	0.50
espadrille shoes	0.50

formal shoes.jpg

footwear	0.90
light brown color	0.86
protective covering	0.80
clothing	0.80
shoe	0.72
wing tip	0.69
boot	0.60
shoes	0.56
cowboy boot	0.50
beige color	0.47

high heeled boots.jpg

light brown color	0.95
beige color	0.92
footwear	0.91
shoe	0.89
protective covering	0.80
clothing	0.79
pump	0.69
spectator pump	0.69
chopine (platform) shoe	0.62
saddle shoe	0.55
sandal	0.50

man coat 1.jpg

beige color	1.00
overgarment	0.97
garment	0.97
coat	0.96
trench coat	0.82

women coat 1.jpg

beige color	1.00
garment	0.94
overgarment	0.94
coat	0.93
raincoat	0.92

women coat 2.jpg

overgarment	0.96
garment	0.96
coat	0.95
olive green color	0.88
sheepskin coat	0.86

7. Use the **Threshold** slider to only display images in which Watson VR has at least 90% confidence of the beige color.

General

Associated Service : watson-vision-combined-ey

Overview   **Test**   **Implementation**

Filter

Threshold   0.90

0 ——————————————●——— 1

Class

- [ ] accessory
- [ ] arctic shoe
- [ ] armchair
- [ ] ash grey color
- [ ] beanie
- [x] beige color
- [ ] belt
- [ ] beret
- [ ] black tie
- [ ] blucher shoes
- [ ] bomber jacket
- [ ] boot
- [ ] boothose
- [ ] bootlace
- [ ] bootstrap
- [ ] bottle green color
- [ ] broadloom (carpet)
- [ ] Burberry (raincoat)
- [ ] candy
- [ ] cap
- [ ] cardigan (jacket)
- [ ] chair
- [ ] charcoal color
- [ ] chopine (platform) shoe
- [ ] claret red color
- [ ] clog
- [ ] clothing
- [ ] coal black color
- [ ] coat
- [ ] cowboy boot
- [ ] delicacy
- [ ] double-breasted jacket
- [ ] dress
- [ ] dress suit
- [ ] duffel coat

✕ Clear results

Birkenstocks.jpg

beige color	0.95
footwear	0.93
shoe	0.90
sandal	0.89
tool	0.79
light brown color	0.78
clog	0.50
espadrille shoes	0.50

high heeled boots.jpg

light brown color	0.95
beige color	0.92
footwear	0.91
shoe	0.89
protective covering	0.80
clothing	0.79
pump	0.69
spectator pump	0.69
chopine (platform) shoe	0.62
saddle shoe	0.55
sandal	0.50

man coat 1.jpg

beige color	1.00
overgarment	0.97
garment	0.97
coat	0.96
trench coat	0.82
raincoat	0.82
clothing	0.80
fabric	0.80
double-breasted jacket	0.62
greatcoat	0.54
pea jacket	0.50

women coat 1.jpg

beige color	1.00
garment	0.94
overgarment	0.94
coat	0.93

Gaziano-Girling-chelseas-fashion-men.jpg

beige color	0.95
furniture	0.75
seat	0.73
chair	0.71

Task 3: Share your results

Follow us on Twitter and send us some of the funniest and most interesting results you found with IBM Watson Visual Recognition!

I just learned how to classify images using @IBMWatson in this #Coursera course by @polonglin and @aklson_DS !

Who's in this photo?

Tweet
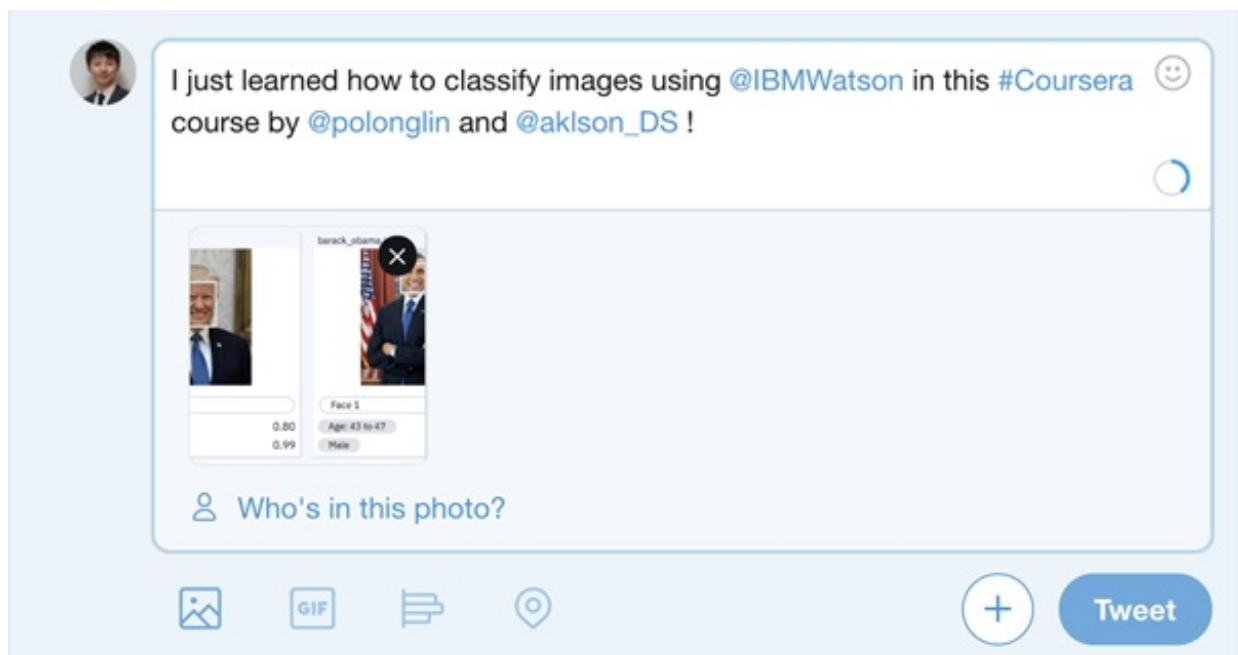
Follow Polong Lin

Follow Alex Aklson