

Exercise: Upload and classify your images!

 coursera.org/learn/what-is-datascience/supplement/ko5Sd/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: [Create a free account on IBM Cloud](#)
2. In the **Email** box, enter your email address and then click the arrow.

Build for free

on IBM Cloud

Develop for free, no credit card required
Apps, AI, analytics, and more. Build with 40+ Lite plan services at no cost to you - ever.

Access the full catalog at your fingertips
Upgrade your account and unlock 190+ unique offerings, plus get a \$200 credit to use with any offering you want.

Learn more
[Pricing](#) [Catalog](#) [Docs](#)

[Cookie Preferences](#)

[Already have an IBM Cloud account? \[Log in\]\(#\)](#)

Create a free account

Join us in the cloud and start building today.

Let's get you started

You don't have an IBM Cloud account yet. Sign up for one with your IBMid to start building in the cloud.

Email

First Name

Last Name

Country or Region

United States

Password

IBM may use my contact data to keep me informed of products, services and offerings:

☒ by email. ☒ by telephone.

You can withdraw your marketing consent at any time by sending an email to netsupp@us.ibm.com. Also you may unsubscribe from receiving marketing emails by clicking the unsubscribe link in each such email.

More information on our processing can be found in the [IBM Privacy Statement](#). By submitting this form, I acknowledge that I have read and understand the IBM Privacy Statement.

I accept the product [Terms and Conditions](#) of this registration form.

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

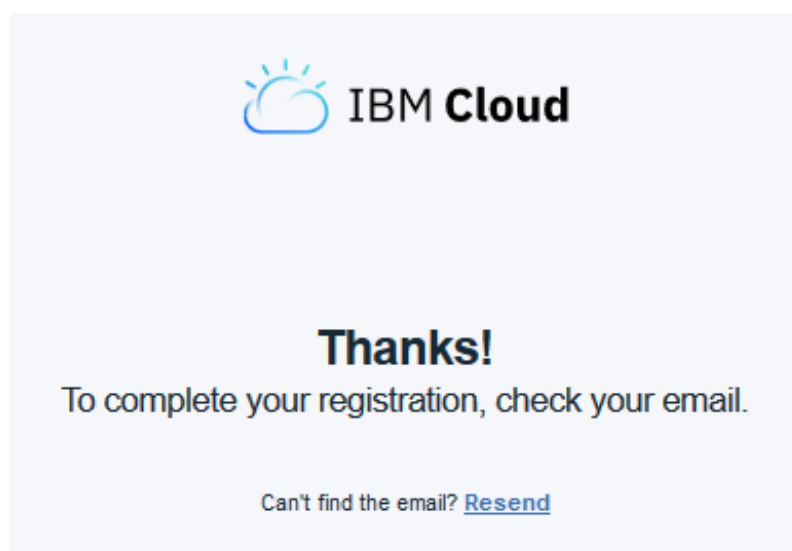
Note: To get enhanced benefits, please sign up with your company email address rather than a free email ID like Gmail, Hotmail, etc.

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.

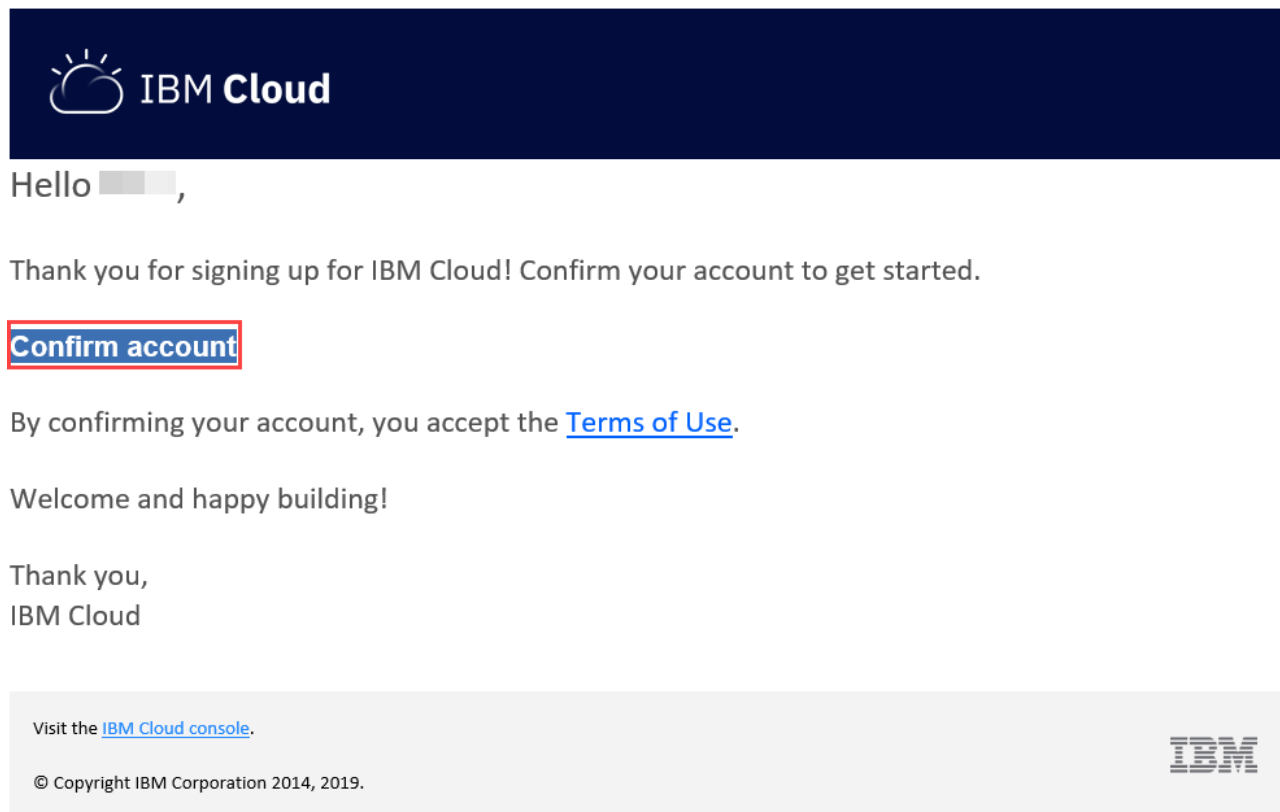
Then click **Create Account** to create your IBM Cloud account.

Task 2: Confirm your email address

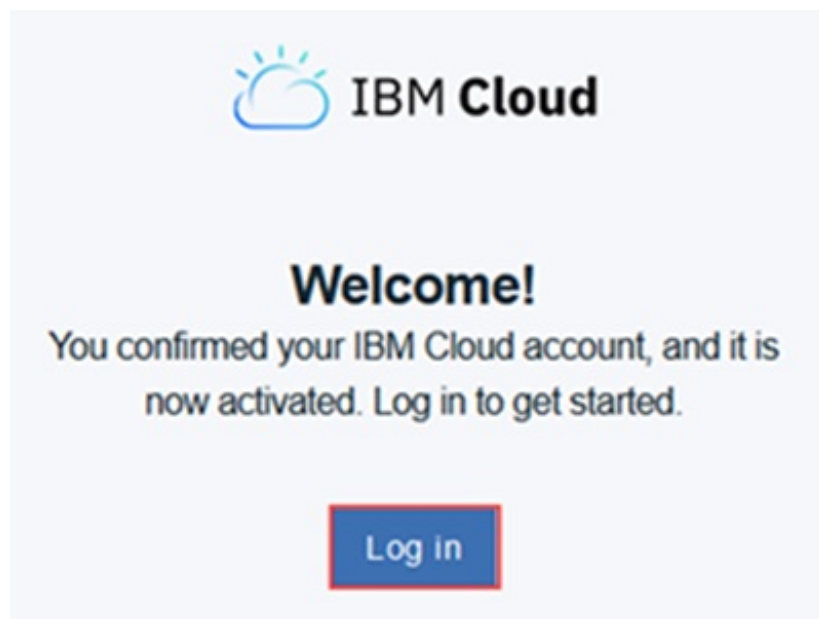
1. An email is sent to the address that you signed up with.



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**.

Welcome to
IBM Cloud

Start building immediately using
190+ unique services.

Create an IBM Cloud account

Get a \$200 credit when you upgrade
After you upgrade to a Pay-As-You-Go account, you can use the credit to try new services or scale your projects. The credit is valid for one month and can be used with any of our IBM Cloud offerings.

Learn more:
[Pricing](#) [Catalog](#) [Docs](#) [Status](#)

Log in to IBM Cloud

ID

IBMId

☐ Remember me

Forgot ID?
Forgot password?

Continue

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

Welcome to
IBM Cloud

Start building immediately using
190+ unique services.

Create an IBM Cloud account

Get a \$200 credit when you upgrade
After you upgrade to a Pay-As-You-Go account, you can use the credit to try new services or scale your projects. The credit is valid for one month and can be used with any of our IBM Cloud offerings.

Learn more:
[Pricing](#) [Catalog](#) [Docs](#) [Status](#)

Log in to IBM Cloud

ID

IBMId

☐ Remember me

Password

Forgot ID?
Forgot password?

Log in

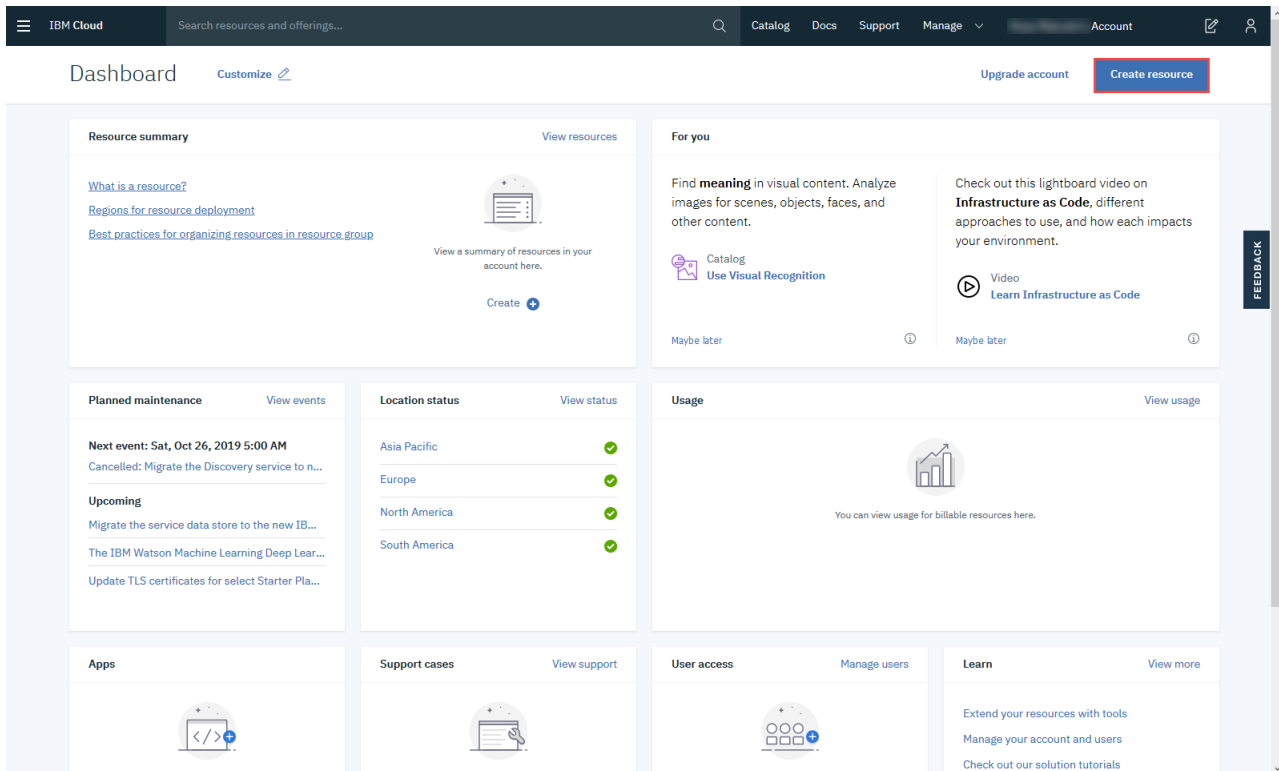
Exercise 2: Create a Watson Studio Resource

Scenario

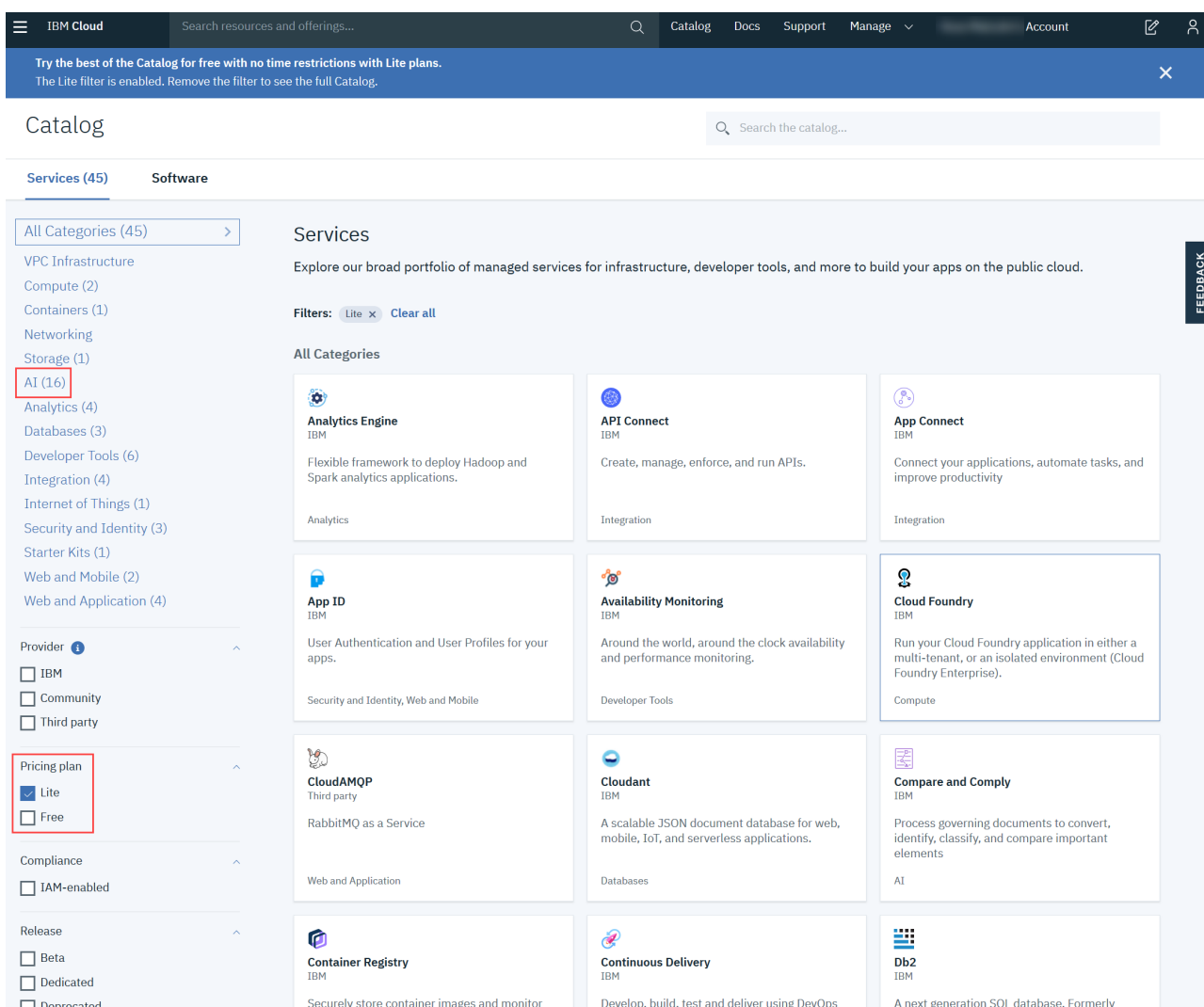
To manage all your projects, you will use IBM Watson Studio. In this exercise, you will add Watson Studio as a Resource.

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**.

IBM Cloud Search resources and offerings...

Try the best of the Catalog for free with no time restrictions with Lite plans. The Lite filter is enabled. Remove the filter to see the full Catalog.

Catalog Search the catalog...

Services (45) Software

All Categories (45)

- VPC Infrastructure
- Compute (2)
- Containers (1)
- Networking
- Storage (1)
- AI (16)
- Analytics (4)
- Databases (3)
- Developer Tools (6)
- Integration (4)
- Internet of Things (1)
- Security and Identity (3)
- Starter Kits (1)
- Web and Mobile (2)
- Web and Application (4)

Provider

- ☒ IBM
- ☐ Community
- ☐ Third party

Pricing plan

- ☒ Lite
- ☐ Free

Compliance

- ☐ IAM-enabled

Services

Explore our broad portfolio of managed services for infrastructure, developer tools, and more to build your apps on the public cloud.

Filters: Lite Clear all

AI

- Watson Assistant** IBM
Watson Assistant lets you build conversational interfaces into any application, device, or channel.
AI
- Watson Studio** IBM
Embed AI and machine learning into your business. Create custom models using your own data.
AI
- Compare and Comply** IBM
Process governing documents to convert, identify, classify, and compare important elements
AI
- Discovery** IBM
Add a cognitive search and content analytics engine to applications.
AI
- Knowledge Catalog** IBM
Discover, catalog, and securely share enterprise data.
AI
- Knowledge Studio** IBM
Teach Watson the language of your domain.
AI
- Language Translator** IBM
Translate text, documents, and websites from one language to another. Create industry or region-specific translations via the service's...
AI
- Machine Learning** IBM
IBM Watson Machine Learning - make smarter decisions, solve tough problems, and improve user outcomes.
AI
- Natural Language Understanding** IBM
Analyze text to extract meta-data from content such as concepts, entities, emotion, relations, sentiment and more.
AI

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

IBM Cloud Search resources and offerings...

Watson Studio Lite IBM Service IAM-enabled

Author: IBM • Date of last update: 07/18/2019

Need Help? Contact Support View docs

Create About

Select a region

Dallas

Select a pricing plan Monthly prices shown are for country or region: United States

PLAN	FEATURES	PRICING
<input checked="" type="checkbox"/> Lite	1 authorized user 50 capacity unit-hours monthly limit 1 free small compute environment with 1 vCPU and 4 GB RAM (does not require capacity unit-hours)	Free
Standard v1	1 authorized user + unlimited viewer collaborators 50 capacity unit-hours included monthly (additional capacity available) Unlimited elastic compute environments Capacity Type: 1 vCPU and 4 GB RAM = 0.5 capacity units required per hour Capacity Type: 2 vCPU and 8 GB RAM = 1 capacity units required per hour Capacity Type: 3 vCPU and 12 GB RAM = 1.5 capacity units required per hour Capacity Type: 4 vCPU and 16 GB RAM = 2 capacity units required per hour Capacity Type: 8 vCPU and 32 GB RAM = 4 capacity units required per hour Capacity Type: 16 vCPU and 64 GB RAM = 8 capacity units required per hour Decision Optimization = (Capacity Type) + 20 capacity units required per hour	\$99.00 USD/Instance \$0.50 USD/Capacity Unit-Hour \$99.00 USD/Authorized User
Enterprise v2	5 authorized users + unlimited viewer collaborators 5,000 capacity unit-hours included monthly (additional capacity available) Unlimited elastic compute environments Capacity Type: 1 vCPU and 4 GB RAM = 0.5 capacity units required per hour	Expand each section to view details

The Lite plan for Watson Studio offers everything you need to become a better data scientist or domain expert in a collaborative environment.
Lite plan services are deleted after 30 days of inactivity.

Create

Add to estimate

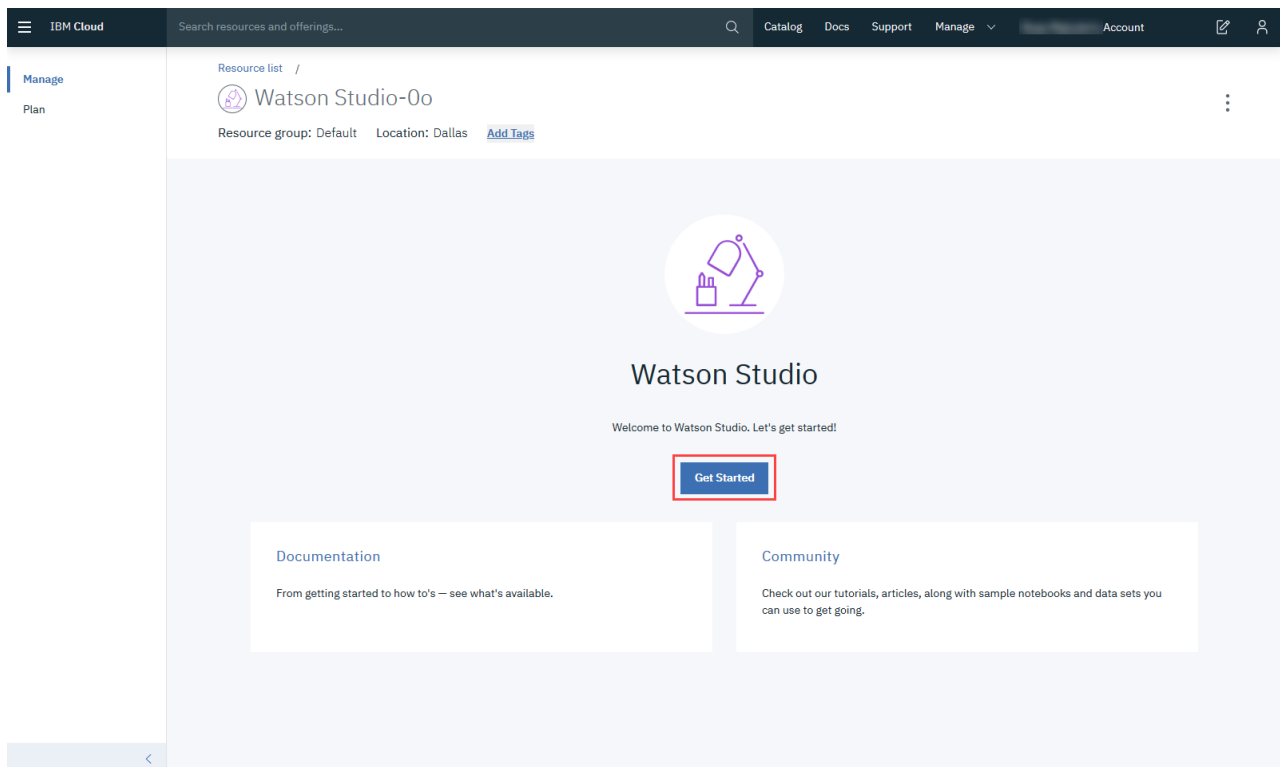
View terms

Summary

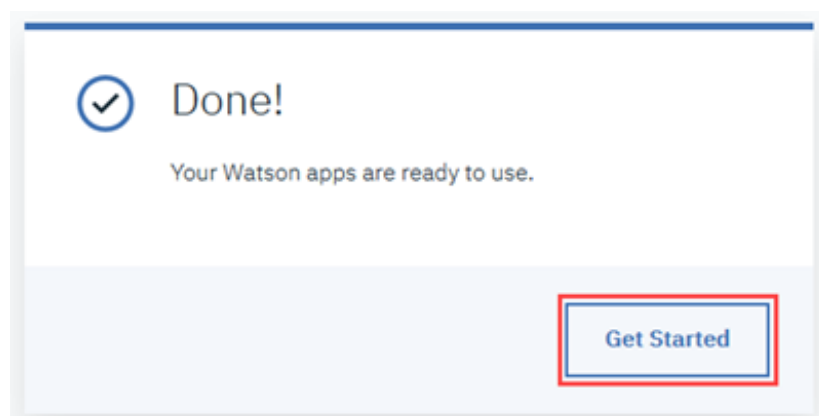
Watson Studio Free

Region: Dallas
Plan: Lite
Service name: Watson Studio-00
Resource group: Default

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**.

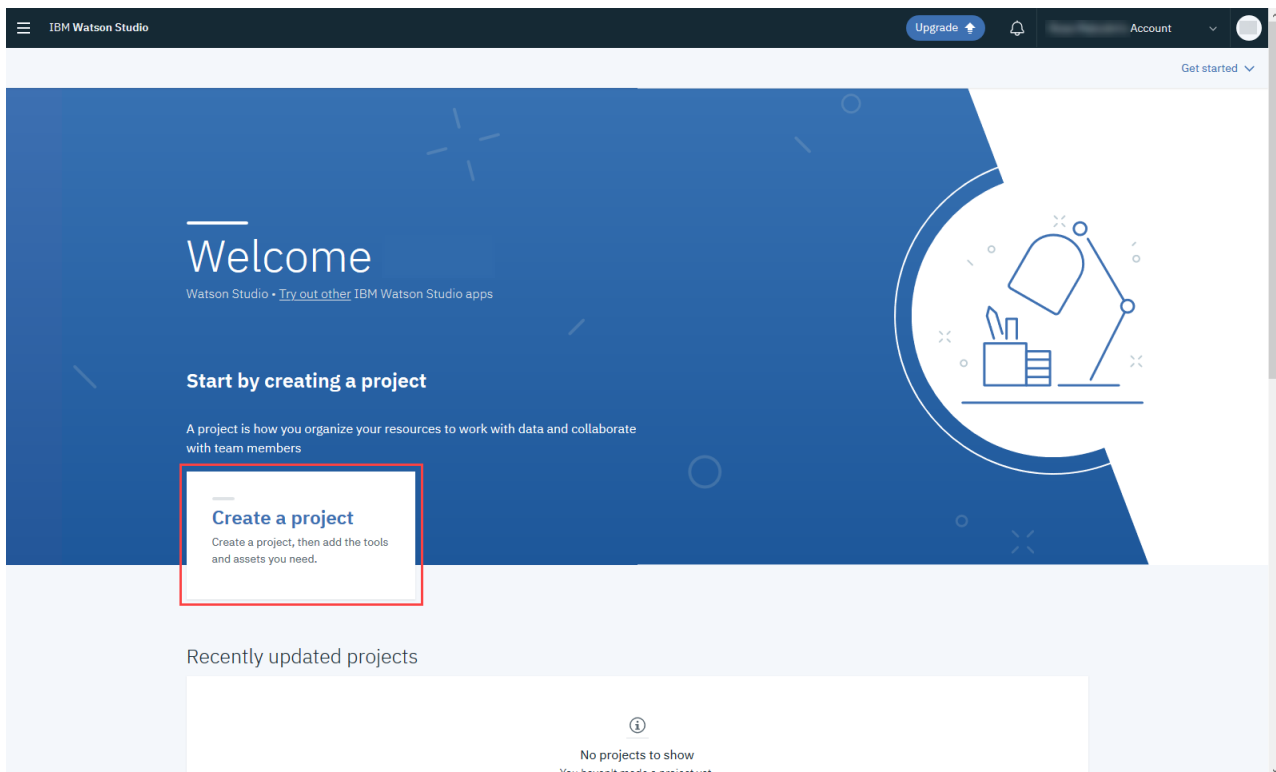
Exercise 3: Create a project

Scenario

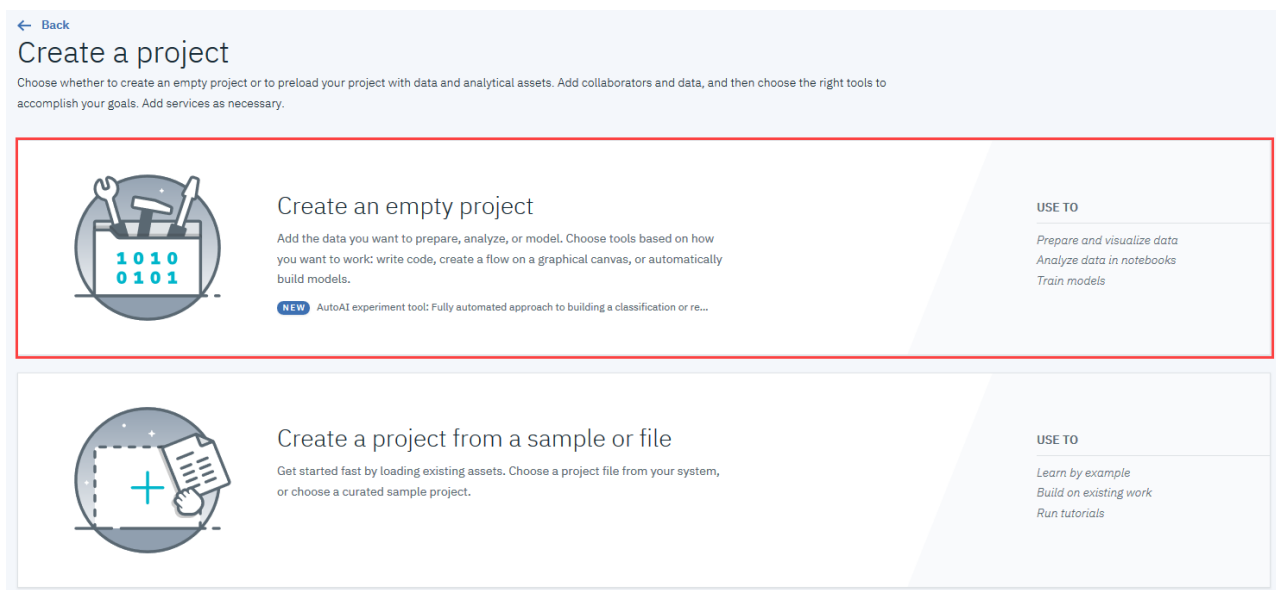
To manage all the resources and services that you are working with, you should create a Watson Studio Project. You will begin by creating an empty project, and then adding the resources and services that you need.

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.

New project

Define project details

Name

Project name

Description

Project description

Choose project options

☐ Restrict who can be a collaborator

Project will include integration with [Cloud Object Storage](#) for storing project assets.

Define storage

① Select storage service

Add

Add an object storage instance and then return to this page and click Refresh.

② Refresh

Cancel

Create

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

New project

Define project details

Name

Project name

Description

Project description

Choose project options

☐ Restrict who can be a collaborator

Project will include integration with [Cloud Object Storage](#) for storing project assets.

Define storage

① Select storage service

Add

Add an object storage instance and then return to this page and click Refresh.

② Refresh

Cancel

Create

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

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IBM Watson Studio

Upgrade

New Watson AI Account

Cloud Object Storage

Existing **New**

Cloud Object Storage

IBM Cloud Object Storage is a highly scalable cloud storage service, designed for high durability, resiliency and security. Store, manage and access your data via our self-service portal and RESTful APIs. Connect applications directly to Cloud Object Storage use other IBM Cloud Services with your data.

Features

Storage for the IBM Cloud
IBM Cloud Object Storage provides unstructured data storage for cloud applications. Libraries and SDKs support a common set of S3 API functions for connecting new applications to scalable cloud storage and integrating your data into other services on the IBM Cloud Platform as well as IBM Watson services. IBM Cloud Object Storage is available with Regional, Cross Region and single site resiliency options worldwide.

Built-in Aspera high-speed transfer
With IBM Cloud Object Storage Aspera high-speed data transfer, you can improve data transfer performance by quickly transferring data over long distances, and under various network conditions. It is natively integrated into Cloud Object Storage and there is no additional cost for uploading data.

Storage Classes and Archive Policy
Choose storage classes based on your usage patterns for active, less-active, and cold workloads with Standard, Vault, and Cold Vault respectively. Use Flex class for dynamic data access with usage patterns that are hard to predict. For rarely used data that requires long-term retention, simply set an Archive policy with our existing storage-class tiers allowing you to reduce costs even further with our lowest priced Archive storage.

Access and Key Management
IBM Identity and Access Management (IAM) policies allow for granular access control at the bucket level using role-based policies. Key Protect support allows customers to have their own managed encryption keys for higher level data security.

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

PLAN	FEATURES	PRICING
<input checked="" type="radio"/> Lite	1 COS Service Instance Storage up to 25 GB/mo. Up to 20,000 GET requests/mo. Up to 2,000 PUT requests/mo. Up to Data Retrieval 10 GB/mo. Up to 5GB Public Outbound Applies to aggregate total across all storage bucket classes	Free
<input type="radio"/> Standard	There is no minimum fee, so you pay only for what you use.	Expand each section to view details

Cancel

Create

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

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

Confirm Creation

Plan

Lite

Resource group

Default

Service name

cloud-object-storage-ai

Cancel

Confirm

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.

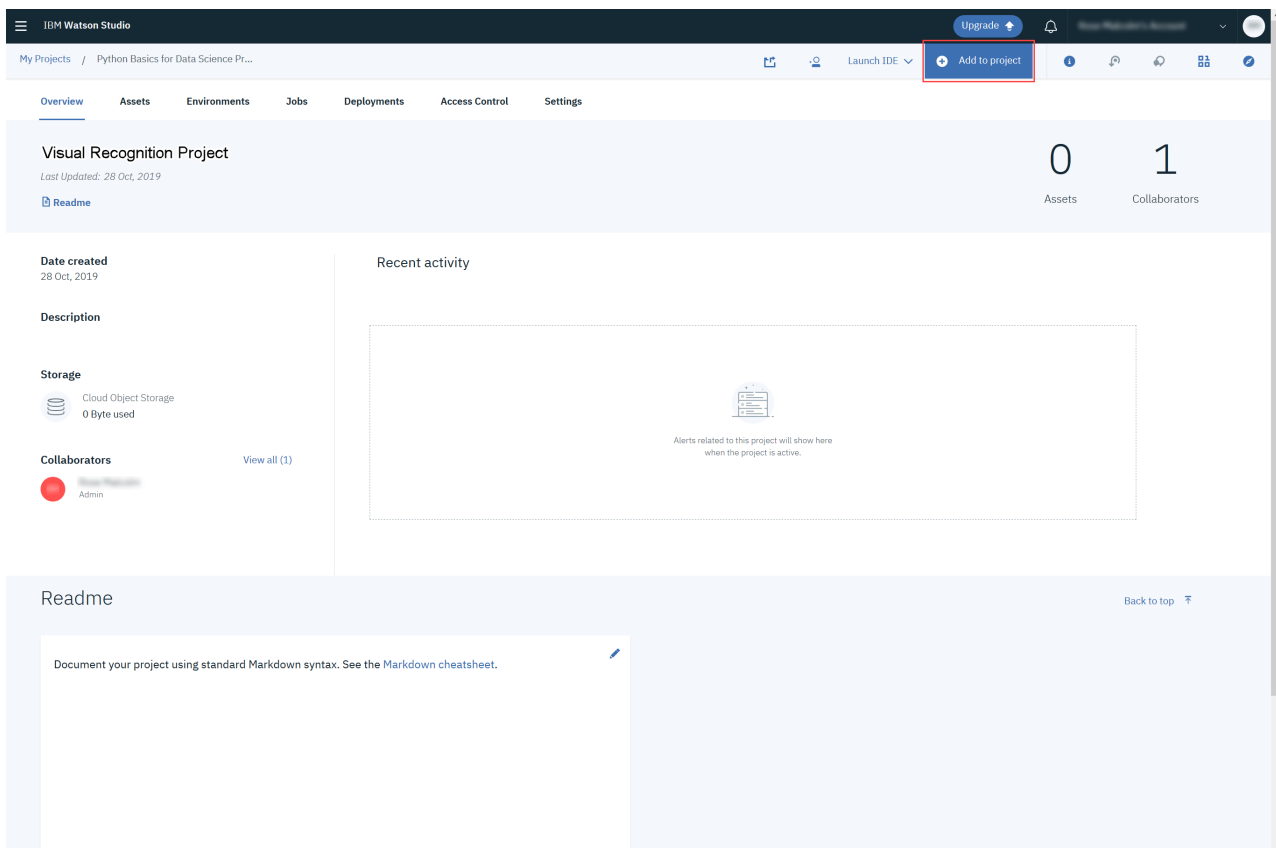
Setup

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

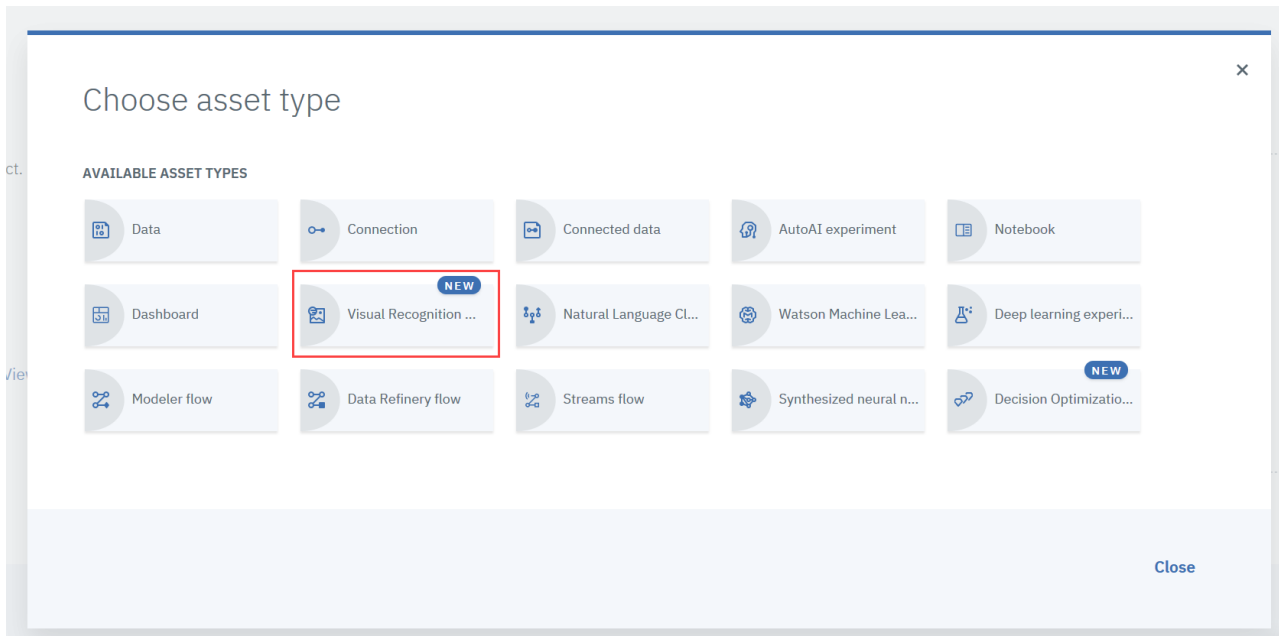
1. Collect a set of at least 20 images. You can use your own images, or download them from the internet.
2. Store the images in an easy to find location.

Task 1: Add the Visual Recognition Service

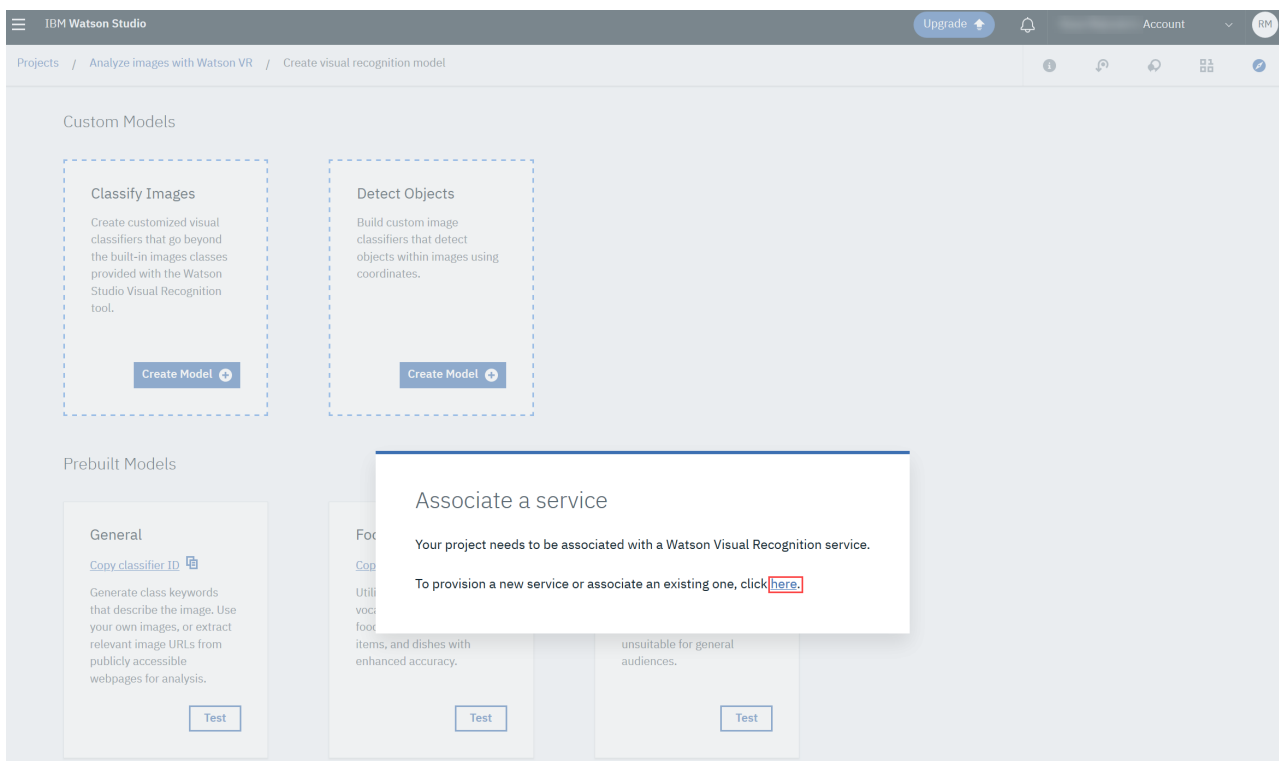
1. To add services to the project, click **Add to project**.



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
<input checked="" type="radio"/> 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	Free
<input type="radio"/> 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

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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 Q 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

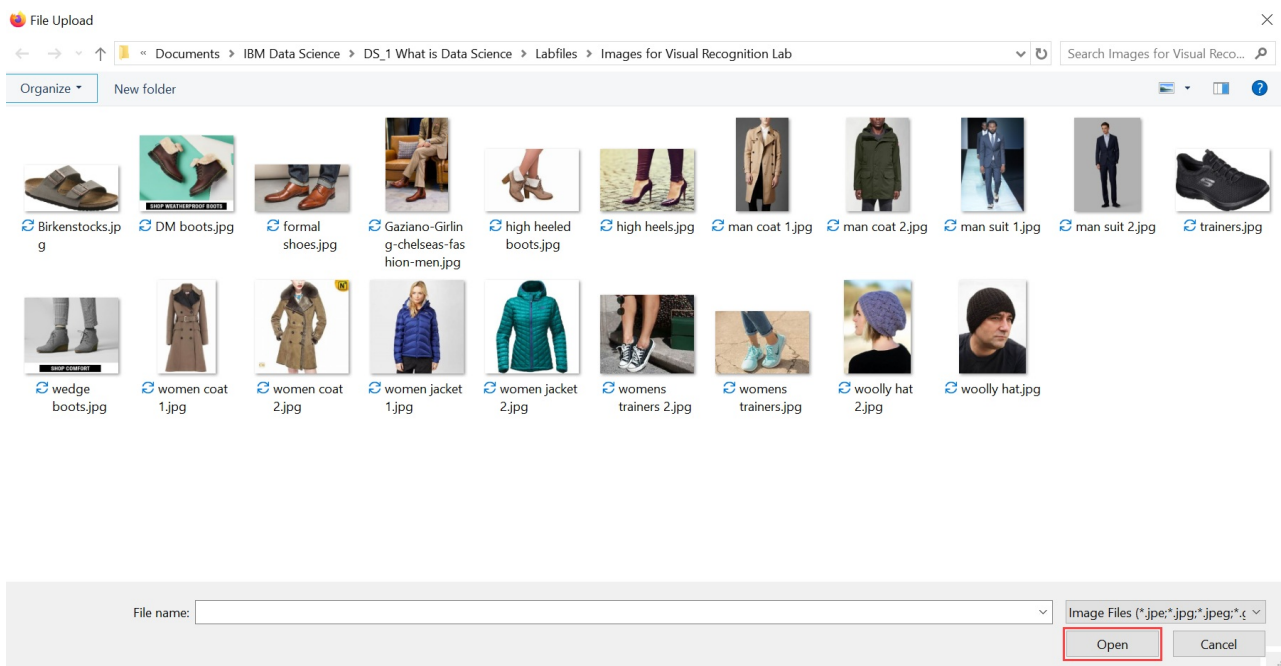
Threshold 0.0
0 ————— 1

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
headaddress	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

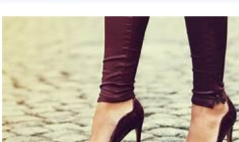


footwear	0.90
light brown color	0.86
protective covering	0.80
clothing	0.80
shoe	0.72
wing tip	0.69
boot	0.60
shoes	0.56
cowboy boot	0.50
beige color	0.47

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



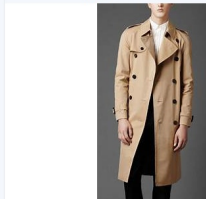
footwear	0.90
light brown color	0.86
protective covering	0.80
clothing	0.80
shoe	0.72
wing tip	0.69
boot	0.60
shoes	0.56
cowboy boot	0.50
beige color	0.47

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
- ☒ 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

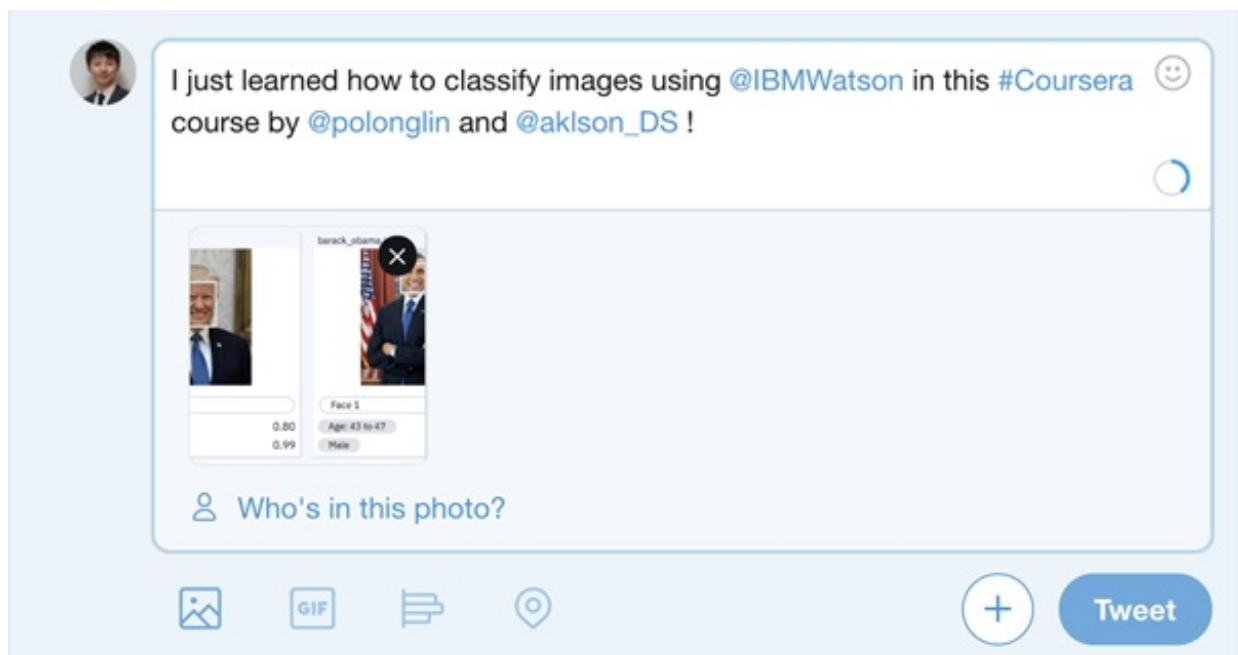
Gaziano-Girling-chelseas-fashion-men.jpg



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!



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