

# Coffee-Donuts-Visual-Recognition

Wake Up with Coffee and Donuts Visual Recognition - Hands on Lab

## Introduction

This hands on lab uses breakfast images, Watson Studio and Watson Visual Recognition to detect your favorite donuts, coffee mugs and bags of eye-opening coffee.

The screenshot shows the IBM Watson Studio interface with the title "CoffeeOrDonut". The "Associated Service" is listed as "watson-vision-combined-jw". The "Test" tab is selected. On the left, there is a "Filter" section with a "Threshold" slider set to 0.0 and a "Class" section with checkboxes for "Coffee Bag", "Coffee Mug", and "Donut". There are six image cards displayed:

- Donut 14.jpg**: Three powdered donuts. Score: Donut 0.91, Coffee Mug 0.00, Coffee Bag 0.00.
- Donut 15.jpg**: A variety of donuts (glazed, powdered, chocolate). Score: Donut 0.91, Coffee Mug 0.00, Coffee Bag 0.00.
- Coffee Bag 15.jpg**: A bag of Folgers coffee beans. Score: Coffee Bag 0.90, Coffee Mug 0.05, Donut 0.01.
- Coffee Bag 14.jpg**: A bag of Cafe Copan coffee beans. Score: Coffee Bag 0.91, Coffee Mug 0.00, Donut 0.00.
- Coffee Mug 14.jpg**: A white coffee mug. Score: Coffee Mug 0.91, Donut 0.02, Coffee Bag 0.00.
- Coffee Mug 15.jpg**: A stack of white coffee mugs. Score: Coffee Mug 0.90, Donut 0.04, Coffee Bag 0.00.

## Learning objectives

After completing this tutorial you will be able to:

- Create a Visual Recognition model in Watson Studio running in IBM Cloud
- Capture images of Coffee Mugs, Coffee Bags and Donuts and zip them into a class (provided)
- Train a model to identify objects in the images
- Score the identified objects

# Prerequisites

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This tutorial can be completed using an IBM Cloud Lite account.

- Create an [IBM Cloud account](#)
- Log into [IBM Cloud](#)

## Estimated time

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You can complete this task in no more than 20 minutes.

# Hands on Lab Overview

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The outline below provides a high level overview of the steps included in the lab instructions.

## Step 1 - Capturing Images

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In this lab, we have created three zip files of pictures. The lab will use these images to identify coffee mugs, bags of coffee beans and donuts. These images will be used as our training set.

- Grab them all [here](#)
- Images of bags of Coffee Beans - [CoffeeBag.zip](#)
- Images of Coffee Mugs - [CoffeeMug.zip](#)
- Images of Donuts - [Donut.zip](#)

## Step 2 - Watson Studio

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In this section, we will create a Watson Studio account, create a Project and Watson Visual Recognition model to identify images in several classes.

- Create a Watson Studio account - follow these [instructions](#)
- Create a Project
- Create a Visual Recognition model - follow these [instructions](#)
- Upload three zip files to Cloud Object Storage
- Create a class *Coffee Bag* - drag a zipfile
- Create another class *Coffee Mug* - drag a zipfile
- Create another class *Donut* - drag a zipfile
- Train your model - wait a few minutes

## Step 3 - Test your model

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In this section you will use sample images to confirm your model.

- Test your model - follow these [instructions](#)

## Step 4 - Implement this model in your Application

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- Embed your model into an application using these code snippets

Let's get started - Set up Watson Studio

# Watson Studio Set up and Configuration in IBM Cloud

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## Lab Objectives

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In this lab you will set up Watson Studio with a new Project. You will learn:

- Watson Studio
- How to set up a new Watson Studio Project

## Introduction

Watson Studio accelerates the machine and deep learning workflows required to infuse AI into your business to drive innovation. It provides a suite of tools for data scientists, application developers and subject matter experts, allowing them to collaboratively connect to data, wrangle that data and use it to build, train and deploy models at scale. Successful AI projects require a combination of algorithms + data + team, and a very powerful compute infrastructure.

- Learn more from the Experts - [Introducing IBM Watson Studio](#)

## Watson Studio Setup

### Log into Watson Studio

- If you created a **Watson Studio** service instance in a prior lab, you can relaunch Watson

Studio by visiting <http://dataplatform.cloud.ibm.com>

- Skip the next **Create a Watson Studio service instance** section if you do not need to create a new Watson Studio instance. (Only one Watson Studio instance is allowed per IBM Cloud Lite account). Jump to the **Watson Studio Projects** section.
- If you want to learn how to navigate the **IBM Cloud Dashboard**, click on **Services**, then search for *studio* in the masthead.
  - **Tip:** Here's a shortcut to locate your [Watson Studio instance](#)

The screenshot shows the IBM Cloud Services dashboard with a search bar at the top containing the text 'studio'. Below the search bar is a table titled 'Resource list' with columns: Name, Group, Location, Offering, Status, and Tags. A filter bar above the table includes fields for Group, Location, Offering, Status, and Tags, each with a 'Filter...' button. The 'Name' column is currently sorted. The table lists several resources under the 'Services' category, including 'Watson Studio-jaw' which is highlighted. Other listed services include Storage, Cloud Foundry Enterprise Environments, and Apps. The 'Status' column shows 'Provisioned' for Watson Studio and '--' for the others. The 'Location' column shows 'Dallas' for Watson Studio and 'Cloud Foundry' for the others. The 'Offering' column shows 'Watson Studio' for Watson Studio and 'Cloud Foundry' for the others. The 'Tags' column shows '--' for all resources.

Name	Group	Location	Offering	Status	Tags
Watson Studio-jaw	default	Dallas	Watson Studio	Provisioned	--
Storage				--	
Cloud Foundry Enterprise Environments				--	
Apps				--	

- Click on the Watson Studio instance to open and launch Watson Studio.

## Create a Watson Studio service instance

- Create a **Watson Studio** service instance from the **IBM Cloud Catalog**
- Search on **Studio** in the IBM Cloud Catalog

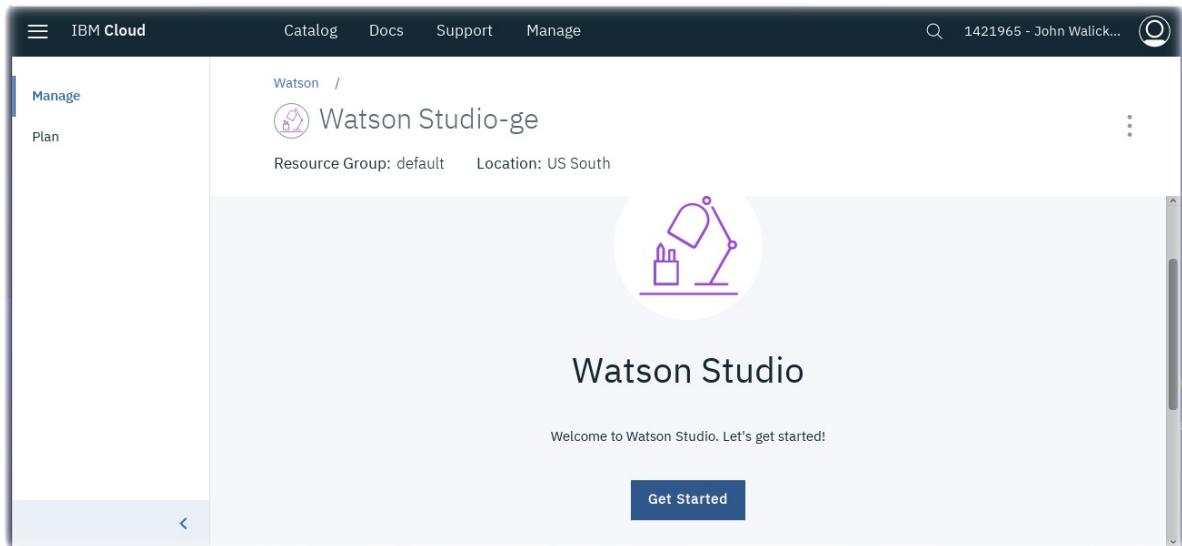
The screenshot shows the IBM Cloud Catalog interface. At the top, there's a navigation bar with 'IBM Cloud' and links for 'Catalog', 'Docs', 'Support', and 'Manage'. A user profile is shown on the right. Below the navigation is a search bar with the text 'Studio' and a 'Filter' button. On the left, a sidebar lists 'All Categories (4)' and various service categories like 'Compute', 'Containers', 'Networking', etc. The main area displays search results under the 'AI' category. Three service tiles are visible: 'Knowledge Studio' (Lite • IBM), 'Natural Language Understanding' (Lite • IBM), and 'Watson Studio' (Lite • IBM). The 'Watson Studio' tile is highlighted with a blue border. The URL at the bottom of the screen is <https://console.bluemix.net/catalog/services/watson-studio>.

- Click on the **Watson Studio** service tile

The screenshot shows the detailed view of the Watson Studio service. At the top, it shows the service name 'Watson Studio' (Lite • IBM) and a brief description: 'Watson Studio democratizes machine learning and deep learning to accelerate infusion of AI in your business to drive innovation. Watson Studio provides a suite of tools and a collaborative environment for data scientists, developers and domain experts.' Below this are sections for 'View Docs' and 'Terms'. On the left, there are metadata fields: 'AUTHOR' (IBM), 'PUBLISHED' (08/01/2018), and 'TYPE' (Service). The central part of the page is titled 'Features' and contains two bullet points: 'Use what you know, learn what you don't' (describing the ability to start from a tutorial or scratch) and 'Power on demand' (describing enterprise-scale features). At the bottom, there are links for 'Need Help?' (Contact IBM Cloud Support), 'Estimate Monthly Cost' (Cost Calculator), and a prominent blue 'Create' button.

- Click on the **Create** button

- After the Watson Studio service is created, click on **Get Started** or visit Watson Studio at <https://dataplatfrom.cloud.ibm.com/>



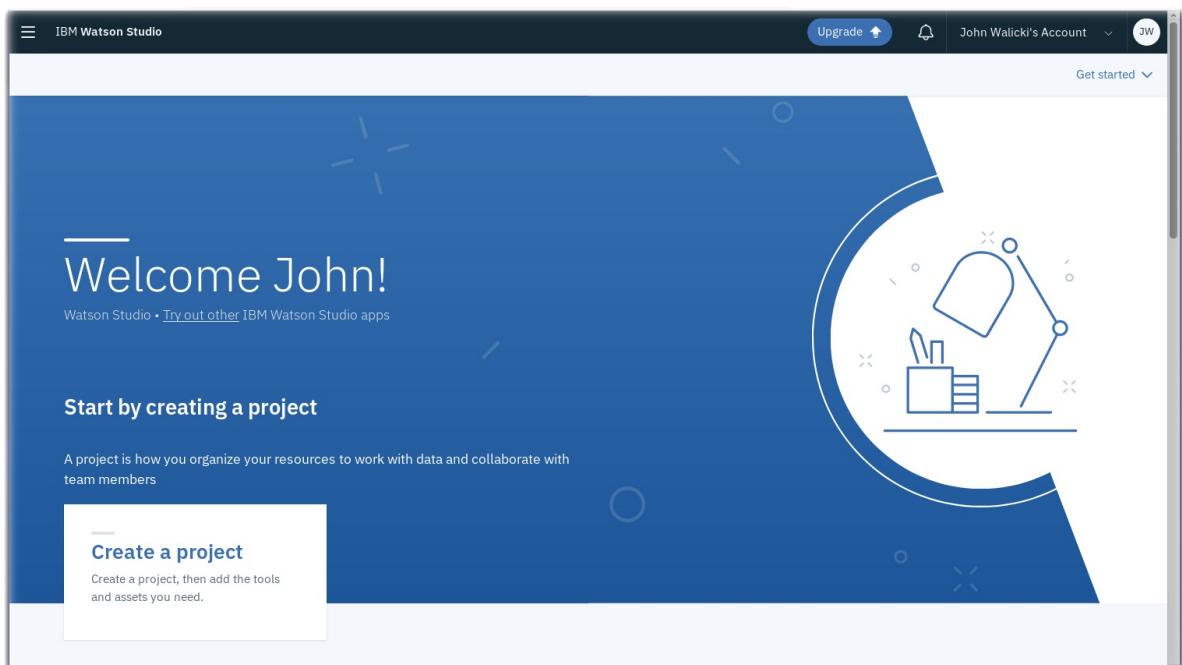
- Login with your IBM Cloud account
- Walk through the introductory tutorial to learn about Watson Studio

## Watson Studio Projects

Projects are your workspace to organize your resources, such as assets like data, collaborators, and analytic tools like notebooks and models

### Create a New Project

- Click on **Create a Project**



- Select the **Create an empty project** tile

The screenshot shows the 'Create a project' page in IBM Watson Studio. It features two main tiles:

- Create an empty project:** This tile includes a circular icon with binary code (1010 0101) and tools like a wrench and screwdriver. The text describes creating an empty project or preloading with data. A 'NEW' badge points to the AutoAI experiment tool.
- Create a project from a sample or file:** This tile includes a circular icon with a plus sign and a document. The text describes getting started by loading existing assets.

Both tiles have a 'USE TO' section on the right listing purposes such as 'Prepare and visualize data', 'Analyze data in notebooks', 'Train models', 'Learn by example', 'Build on existing work', and 'Run tutorials'.

- Give your Project a name : **Coffee or Donuts**
- Click on **Add** to define a Cloud Object Storage instance

The screenshot shows the 'New project' creation form in IBM Watson Studio. The left panel contains 'Define project details' with fields for Name (set to 'Coffee or Donuts') and Description (a placeholder text area). The right panel contains 'Define storage' with steps:

- ① Select storage service: An 'Add' button is present, with a note: 'Add an object storage instance and then return to this page and click Refresh.'
- ② Refresh: A button to update the storage selection.

At the bottom, there's a 'Choose project options' section with a checked checkbox for 'Restrict who can be a collaborator'. A note below states: 'Project will include integration with Cloud Object Storage for storing project assets.' The bottom right has 'Cancel' and 'Create' buttons.

# Create Cloud Object Storage

- You will store images and training data in a Cloud Object Storage bucket
- Select the **Lite** plan and note the features
- Scroll to the bottom and click on the **Create** button and then **Confirm** to create a Cloud Object Storage instance.

The screenshot shows the IBM Watson Studio interface with the title "Cloud Object Storage". Below the title, there are two tabs: "Existing" and "New", with "New" being the active tab. The main content area is titled "Cloud Object Storage" and contains several sections:

- 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 Watson and Cloud Platform available with Regional and Cross Region 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.

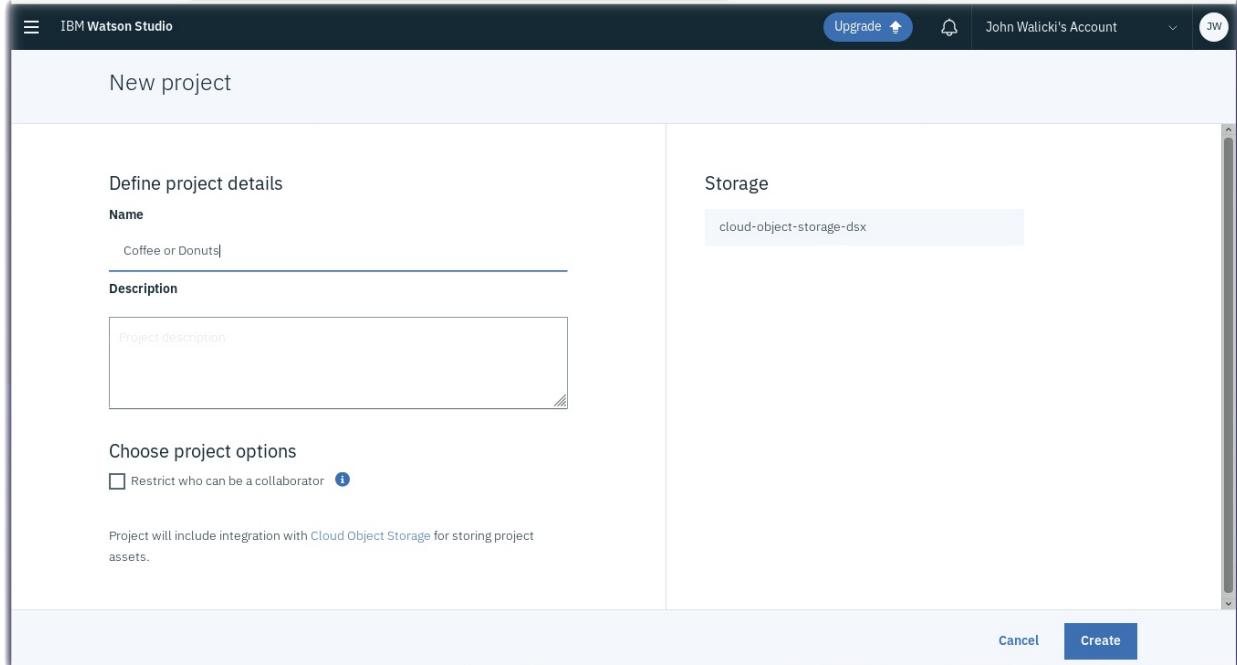
**Pricing Plan:** Monthly Process shown above reflect the: [United States](#)

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

The Lite service plan for Cloud Object Storage includes Regional and Cross Regional resiliency, flexible data classes, and built in security.

Cancel Create

- Click on **Refresh** on the New Project tab.
- Click on **Create** to create the new project.



- Click on **Add to project**

- Select **Image classification model** on the **Choose asset type** popup.

The screenshot shows the IBM Watson Studio interface with a project titled "Coffee or Donuts". A modal window titled "Choose asset type" is open, displaying various asset types. The "Image classification model" is selected and highlighted with a blue border. The modal includes a description: "Classify images with the custom classifiers that you define." A "Close" button is at the bottom right of the modal.

## Provision a new Watson Visual Recognition Service instance

- Your project needs to be associated with a Watson Visual Recognition Service instance
- Click on the **click here** link in the popup to Associate a Watson Visual Recognition service.

here.'. The 'Train Model' button is visible in the top right corner of the modal."/>

The screenshot shows the "Default Custom Model" page in Watson Studio. A modal window titled "Associate a service" is displayed, containing the text: "Your project needs to be associated with a Watson Visual Recognition service." and "To provision a new service or associate an existing one, click [here](#).". In the top right corner of the modal, there is a "Train Model" button. The main page shows "My classes (1)" and "All images (0)". A status message "⚠ Loading data" is visible in the top right of the main page area.

# Create a Watson Visual Recognition Service

- Select the **Lite** plan and note the features
- Scroll to the bottom and click on the **Create** button

The screenshot shows the IBM Watson Visual Recognition service creation interface. At the top, there's a navigation bar with links for Projects, Tools, Community, Services, Manage, Support, and Docs. A user account is also visible. Below the navigation, the title "Visual Recognition" is displayed, with tabs for "Existing" and "New" (which is selected).  
  
The main content area is titled "Visual Recognition" and contains a brief description: "Find meaning in visual content! Analyze images for scenes, objects, faces, 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."  
  
A section titled "Features" lists several models:

- 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.
- Face Model**: Detect human faces in the image. This service also provides a general indication of age range and gender of faces.
- Text Model (Private Beta\*)**: Automatically detect and extract recognized words within natural scene images. \*Private Beta is an invite only program. Customers must have a Standard Plan to be eligible to use Private Beta features. To request access to the Text Model Private Beta: [ibm.biz/request-text](http://ibm.biz/request-text)

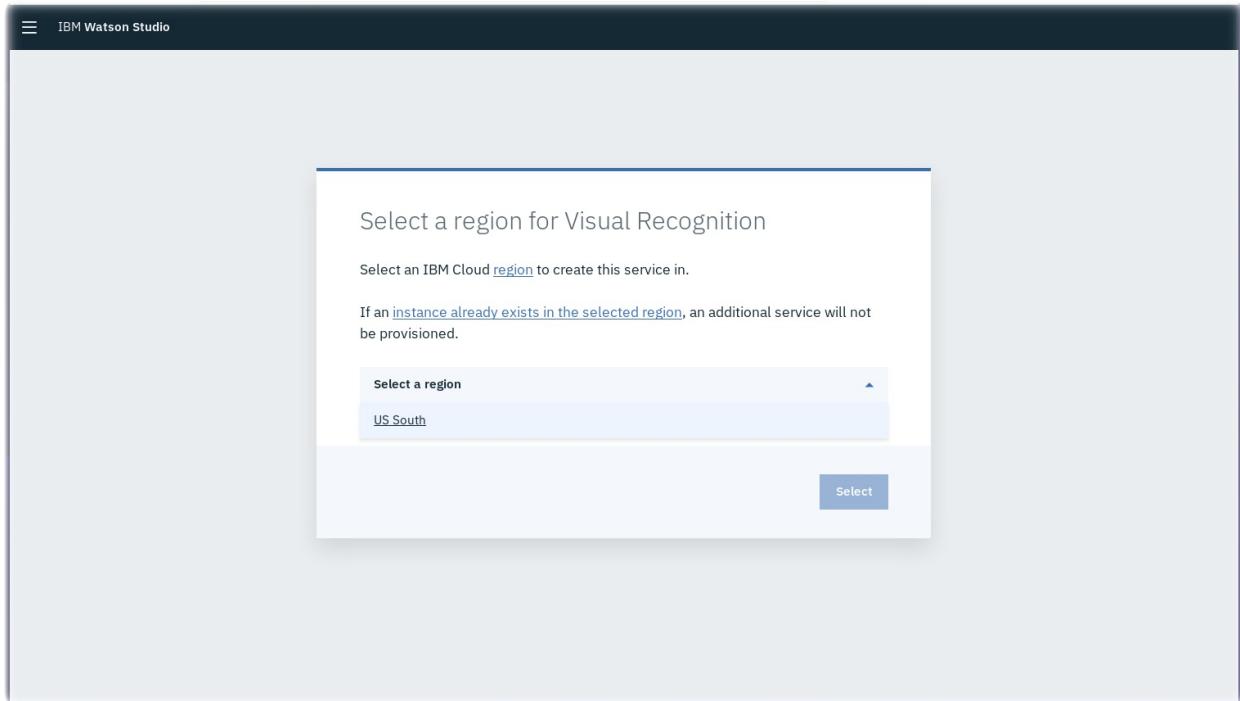
  
Below this, there's a "Pricing Plan" table:

PLAN	FEATURES	PRICING
<input checked="" type="radio"/> <b>Lite</b>	<b>1,000 Events per month towards:</b> Pre-trained model classification (General, Face, 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"/> <b>Standard</b>	<b>Image Tagging Events Pay per Use</b> Face Detection Events Pay per Use Training Events Pay per Use Custom Tagging Events Pay per Use Food Tagging Events Pay per Use Explicit Tagging Events Pay per Use	\$0.002 USD/GeneralTagging \$0.004 USD/FaceRecognition \$0.1 USD/Training \$0.002 USD/CustomTagging \$0.002 USD/FoodTagging \$0.002 USD/ExplicitTagging

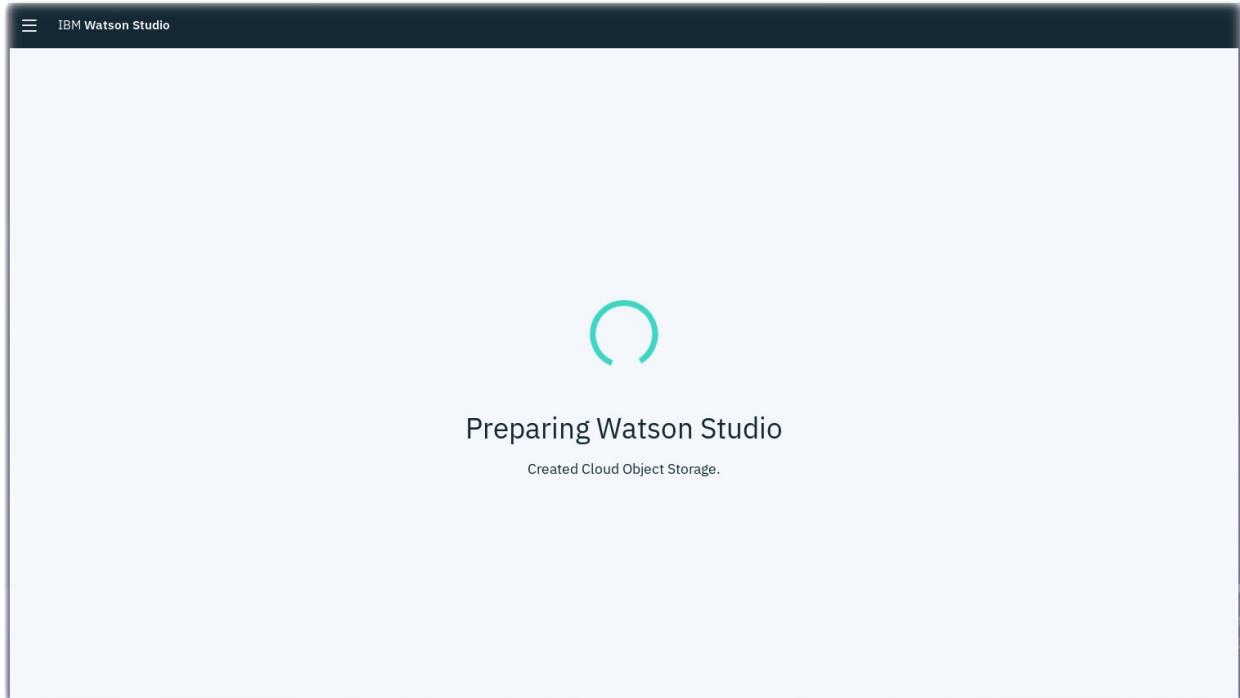
A note below the table states: "The Lite Plan gets you started with 1,000 events (images) per month and the ability to train two Custom Models. Users wishing to use more premium features or increase usage must upgrade to a Standard Plan or a Subscription Plan."

At the bottom right of the form, there are "Cancel" and "Create" buttons, with "Create" being highlighted by a red box.

- Select a region for Visual Recognition



- Watson Studio will spin for a few seconds while **Preparing Watson Studio** project. New instances of Watson Visual Recognition and Cloud Object Storage will be created.



You are ready to set up your Project with Watson Visual Recognition. Proceed to the next [step](#)

# Lab Objectives

In this lab you will create a Visual Recognition model in a Watson Studio Project. You will learn:

- How to work within a new Watson Studio Project
- How to create a Visual Recognition model

## Watson Studio Projects

Projects are your workspace to organize your resources, such as assets like data, collaborators, and analytic tools like notebooks and models.

### Rename Visual Recognition Model

- The **Default Custom Model** name is not descriptive so let's rename it
- Click on the **pencil** icon to edit the name

The screenshot shows the IBM Watson Studio interface. At the top, there is a navigation bar with 'IBM Watson Studio', 'Upgrade', 'John Walicki's Account', and a search bar. Below the navigation bar, the path 'Projects / Coffee or Donuts / Default Custom Model' is visible. The main content area displays the 'Default Custom Model' project details. It includes a title bar with a pencil icon and the text 'Default Custom Model'. Below the title, it says 'Associated Service : watson-vision-combined-jw'. There are two tabs: 'My classes (1)' (which is selected) and 'All images (0)'. A warning message 'At least 2 classes required' is displayed. On the left, there is a placeholder for dragging and dropping files with the text 'Drag and drop files from your project.' Below this, it says '1 class | 0 incomplete classes | 0 unclassified images'. On the right, there is a 'Search classes' input field and a note about training data size: 'New training data size: 0.0/250 MB'. In the center, there is a 'Train Model' button with an information icon. To the right, there are two sections: '1. Upload to project' (with a 'Browse' button) and '2. Add from project' (with a note that no files are selected). At the bottom, there is a 'Create a class' button with a plus sign and a 'Negative (0)' section with a note: 'Use the negative class to train the model on images that do not depict the visual subject of any of the positive classes.' A small note at the bottom of the 'Negative (0)' section says 'This class is recommended but not required.'

- Rename the model to **Coffee or Donuts**

## Add Custom Classes to the Watson Visual Recognition Model

- Click on the + symbol to add a class

- Name this class **Coffee Bag**
- Click the **Create** button

IBM Watson Studio

Projects / Coffee or Donuts / Coffee or Donuts

Associated Service : watson-vision-combined-jw

My classes (1) All Images (0)

Drag and drop files from your project.

1 class | 0 incomplete classes | 0 unclassified images

**Create a class**

Coffee Bag

0.0/250 MB

Cancel Create

Use the negative class to train the model on images that do not depict the visual subject of any of the positive classes.

**Negative (0)**

This class is recommended but not required.

Train Model

1. Upload to project

To add files to your project, drop .jpeg, .png, or .zip files here or **Browse**

2. Add from project

Drag .jpeg, .png, or .zip files from your project to the training area to add them to your model.

0 selected

There are no .jpeg, .png, or .zip files in your project.

The screenshot shows the 'Create a class' dialog box in the IBM Watson Studio interface. The class name 'Coffee Bag' is entered. A note below says 'Use the negative class to train the model on images that do not depict the visual subject of any of the positive classes.' There are 'Cancel' and 'Create' buttons at the bottom. The main workspace shows one class named 'Coffee Bag' with zero images. A note says 'This class is recommended but not required.' On the right, there are sections for uploading files to the project and adding files from the project itself. The 'Train Model' button is visible at the top right.

- Add a second custom class by clicking on the + symbol again

IBM Watson Studio

Projects / Coffee or Donuts / Coffee or Donuts

Associated Service : watson-vision-combined-jw

My classes (2) All Images (0)

Drag and drop files from your project.

2 classes | 1 incomplete class | 0 unclassified images

Search classes

New training data size: 0.0/250 MB

**Create a class**

**Coffee Bag (0)**

Add 10 Images to train this class.

**Negative (0)**

This class is recommended but not required.

Train Model

1. Upload to project

To add files to your project, drop .jpeg, .png, or .zip files here or **Browse**

2. Add from project

Drag .jpeg, .png, or .zip files from your project to the training area to add them to your model.

0 selected

There are no .jpeg, .png, or .zip files in your project.

The screenshot shows the IBM Watson Studio interface with two classes listed: 'Coffee Bag (0)' and 'Negative (0)'. The 'Create a class' button has a red box around it. A note says 'Add 10 Images to train this class.' On the right, there are sections for uploading files to the project and adding files from the project itself. The 'Train Model' button is visible at the top right.

- Name this class **Coffee Mug**
- Click the **Create** button

The screenshot shows the IBM Watson Studio interface for a project titled "Coffee or Donuts". The main area displays two existing classes: "Coffee Bag (0)" and "Negative (0)". A modal dialog box is open, titled "Create a class", with the input field containing "Coffee Mug". Below the input field is a note: "subject of any of the positive classes." At the bottom of the dialog are "Cancel" and "Create" buttons. To the right of the dialog, there are sections for uploading files and adding from project, both currently empty.

- Add a third custom class by clicking on the + symbol again
- Name this class **Donut**
- Click the **Create** button

The screenshot shows the IBM Watson Studio interface for the same project. The main area now displays three classes: "Coffee Bag (0)", "Coffee Mug (0)", and the newly created "Donut (0)". The "Create a class" dialog is still open, showing the input field with "Donut". The note below the input field is partially visible. The right sidebar remains empty.

## Upload Zip Files to Watson Studio Project

- Three zip files have been prepared which contain coffee and donut images
- If you are following these steps in an IBM Booth at a conference, these zip files may already be downloaded onto the QuickLab laptop.
- If you are following these steps on the web, download the zip files here:
  - [CoffeeBag.zip](#)
  - [CoffeeMug.zip](#)
  - [Donut.zip](#)
- Click on the **Browse** button
- An operating system native File Dialog will open
- Multi-select the three zip files **CoffeeBag.zip**, **CoffeeMug.zip**, **Donut.zip**
- Upload these zip files to your Watson Studio project

The screenshot shows the IBM Watson Studio interface for a project named "Coffee or Donuts". The main area displays four classes: "Create a class", "Coffee Bag (0)", "Coffee Mug (0)", and "Donut (0)". Each class has a note indicating "Add 10 images to train this class.". Below these is a box containing the text: "Use the negative class to train the model on images that do not depict the visual subject of any of the positive classes." To the right, a sidebar titled "1. Upload to project" contains a dashed box with the text "To add files to your project, drop .jpeg, .png, or .zip files here or" and a "Browse" button, which is highlighted with a red box. Another section titled "2. Add from project" says "Drag .jpeg, .png, or .zip files from your project to the training area to add them to your model." and notes "0 selected". At the bottom right of the main area is a blue message icon.

## Drag the zip files to Custom Classes

- Grab the **CoffeeBag.zip** from the right navigation and drag it to the **Coffee Bag** class

- The images in the zip file will be added to the **Coffee Bag** class

IBM Watson Studio

Projects / Coffee or Donuts / Coffee or Donuts

## Coffee or Donuts

Associated Service : watson-vision-combined-jw

**My classes (4)** All images (13)

Drag and drop files from your project.

4 classes | 2 incomplete classes | 0 unclassified images

**Coffee Bag (13)**

**Coffee Mug (0)** Add 10 images to train this class.

**Donut (0)** Add 10 images to train this class.

**Negative (0)** This class is recommended but not required.

Search classes

New training data size: 0.1/250 MB

Train Model

1. Upload to project

To add files to your project, drop .jpeg, .png, or .zip files here or **Browse**

2. Add from project

Drag .jpeg, .png, or .zip files from your project to the training area to add them to your model.

0 selected

- CoffeeBag.zip** 3 Aug 2019, 10:40:47 pm 128.32 KB
- CoffeeMug.zip** 3 Aug 2019, 10:40:47 pm 65.94 KB
- Donut.zip** 3 Aug 2019, 10:40:47 pm 124.68 KB

- Grab the **CoffeeMug.zip** from the right navigation and drag it to the **Coffee Mug** class

IBM Watson Studio

Projects / Coffee or Donuts / Coffee or Donuts

## Coffee or Donuts

Associated Service : watson-vision-combined-jw

**My classes (4)** All images (26)

Drag and drop files from your project.

4 classes | 1 incomplete class | 0 unclassified images

**Coffee Bag (13)**

**Coffee Mug (13)** 0/13 images loaded

**Donut (0)** Add 10 images to train this class.

**Negative (0)** This class is recommended but not required.

Search classes

New training data size: 0.1/250 MB

Train Model

1. Upload to project

To add files to your project, drop .jpeg, .png, or .zip files here or **Browse**

2. Add from project

Drag .jpeg, .png, or .zip files from your project to the training area to add them to your model.

0 selected

- CoffeeBag.zip** 3 Aug 2019, 10:40:47 pm 128.32 KB
- CoffeeMug.zip** Loading file into model... (highlighted with a red box)
- Donut.zip** 3 Aug 2019, 10:40:47 pm 124.68 KB

- Grab the **Donut.zip** from the right navigation and drag it to the **Donut** class

IBM Watson Studio

Projects / Coffee or Donuts / Coffee or Donuts

## Coffee or Donuts

Associated Service : watson-vision-combined-jw

**My classes (4)** All images (39)

Drag and drop files from your project.

4 classes | 0 incomplete classes | 0 unclassified images

New training data size: 0.2/250 MB

**Train Model**

**Loading images**

Search classes

**1. Upload to project**

To add files to your project, drop .jpeg, .png, or .zip files here or **Browse**

**2. Add from project**

Drag .jpeg, .png, or .zip files from your project to the training area to add them to your model.

0 selected

CoffeeBag.zip 3 Aug 2019, 10:40:47 pm 128.32 KB

CoffeeMug.zip 3 Aug 2019, 10:40:47 pm 65.94 KB

**Donut (13)** 0/13 images loaded

**Negative (0)** This class is recommended but not required.

**Donut.zip** Loading file into model...

- This custom classifier does not contain a **Negative** zip file. It is recommended but not required.

## Train your Watson Visual Recognition Custom Classifier

- Click on the **Train Model** button
- Wait a few (5-10) minutes for the model to train on the images

The screenshot shows the IBM Watson Studio interface for a project named "Coffee or Donuts". The main area displays four classes: "Create a class" (empty), "Coffee Bag (13)" (with preview images), "Coffee Mug (13)" (with preview images), and "Donut (13)" (with preview images). A "Negative (0)" section is also present. On the right, a sidebar titled "1. Upload to project" shows a "Browse" button and a list of uploaded files: "CoffeeBag.zip" (3 Aug 2019, 10:40:47 pm, 128.32 KB), "CoffeeMug.zip" (3 Aug 2019, 10:40:47 pm, 65.94 KB), and "Donut.zip" (3 Aug 2019, 10:40:47 pm, 124.68 KB). A message indicates the new training data size is 0.3/250 MB. A "Ready to train" status is shown at the top right.

## Congratulations

- Once the model has been trained, click on the **Click here** link or the **Trained** link to view and test your model.

IBM Watson Studio

Projects / Coffee or Donuts / Coffee or Donut / Edit and retrain

**Training successful** Your model training was successful. Click [here](#) to view and test your model.

### Coffee or Donut

Associated Service : watson-vision-combined-jw

**My classes (4)** **All images (39)**

**Trained** (Red Box)

Drag and drop files from your project.

4 classes | 0 incomplete classes | 0 unclassified images

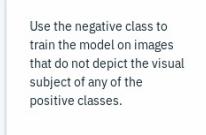
New training data size: 0.0/250 MB

**Create a class** 

**Coffee Bag (13)** 

**Coffee Mug (13)** 

**Donut (13)** 

**Negative (0)** 

Use the negative class to train the model on images that do not depict the visual subject of any of the positive classes.

This class is recommended but not selected.

To add files to your project, drop .jpeg, .png, or .zip files here or **Browse**

**2. Add from project**

Drag .jpeg, .png, or .zip files from your project to the training area to add them to your model.

**0 selected**

- CoffeeMug.zip** 3 Aug 2019, 11:10:29 pm 65.94 KB
- CoffeeBag.zip** 3 Aug 2019, 11:10:29 pm 128.32 KB
- Donut.zip** 3 Aug 2019, 11:10:29 pm 124.68 KB

## Review and Test

- Review the Classes and Model details
- Click on the **Test** tab

IBM Watson Studio

Projects / Coffee or Donuts / Coffee or Donut

**Edit and Retrain**

### Coffee or Donut

Associated Service : watson-vision-combined-jw

**Test** (Red Box) **Overview** **Implementation**

**Summary**

Model ID	CoffeedorDonut_464095731
Status	Ready
Explanation	This model is ready for use.
Created on	8/3/2019, 11:11:20 PM
Updated on	8/3/2019, 11:11:20 PM
Number of classes	3
Number of images	39

**Classes**

CLASS	NUMBER OF EXAMPLES
Coffee Bag	13
Coffee Mug	13
Donut	13

# Lab Objectives

In this lab you will use sample images to confirm your Visual Recognition model. You will learn:

- How to test your Visual Recognition model using sample images
- How to incorporate your Visual Recognition Custom Classifier model into your applications

## Review and Test

- Review the Classes and Model details
- Click on the **Test** tab

The screenshot shows the IBM Watson Studio interface. At the top, there's a navigation bar with 'IBM Watson Studio', 'Upgrade', 'John Walicki's Account', and a user icon. Below the bar, the URL 'Projects / Coffee or Donuts / Coffee or Donut' is visible, along with several small icons. The main content area has a title 'Coffee or Donut' and a sub-header 'Associated Service : watson-vision-combined-jw'. There are three tabs: 'Overview' (blue underline), 'Test' (red box), and 'Implementation'. A 'Edit and Retrain' button is located on the right. The 'Summary' section contains a table with the following data:

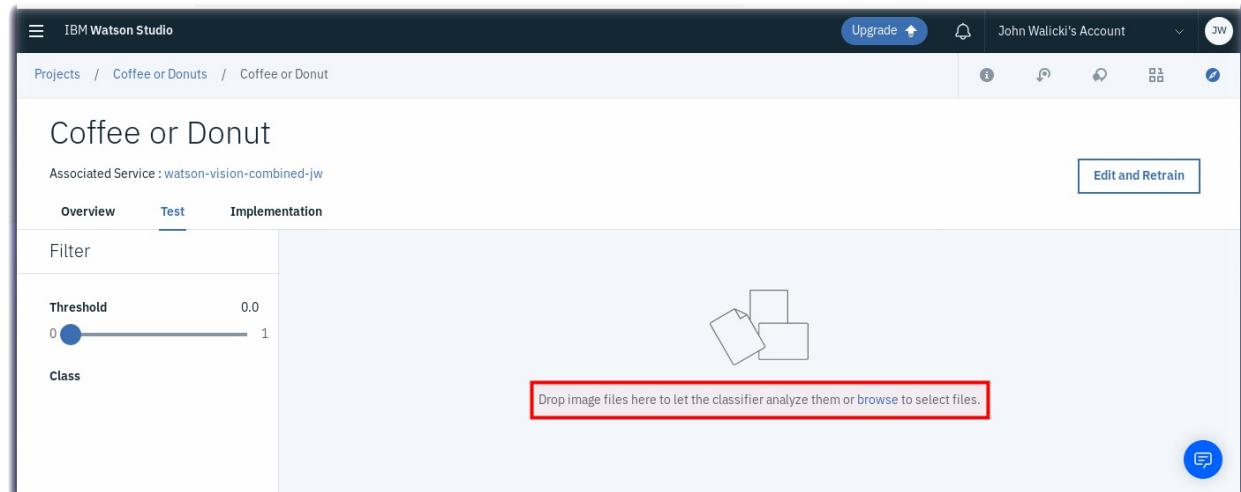
Model ID	CoffeedorDonut_464095731
Status	Ready
Explanation	This model is ready for use.
Created on	8/3/2019, 11:11:20 PM
Updated on	8/3/2019, 11:11:20 PM
Number of classes	3
Number of images	39

Below the summary is a 'Classes' section with a table:

CLASS	NUMBER OF EXAMPLES
Coffee Bag	13
Coffee Mug	13
Donut	13

# Test Watson Visual Recognition Custom Classifier with sample images

- Visit the [Test Data directory](#) and **download** the testdata.zip file. This zip file contains PNG and JPG images
- Unlike the training datasets, you will need to **unzip** the images onto your local hard drive
- Inspect a few of the breakfast images using a local image viewing utility or file browser
- These images were not part of the training set and will be used to validate the visual recognition model
- Return to the **Test** tab in the Watson Studio Flooding project
- There are two techniques to upload the images into the **Test** page
  - Drag the individual images from your local file browser into the Test page
  - Click on the **browse** link to open a file selection dialog



- The trained custom classifier model will analyze the images

- Inspect the **Confidence scores** returned by the Watson Visual Recognition Custom Classifier

IBM Watson Studio

Upgrades John Walicki's Account JW

Projects / Code for Coffee / CoffeeOrDonut

CoffeeOrDonut

Associated Service : watson-vision-combined-jw

Edit and Retrain

Overview Test Implementation

Filter

Threshold 0.0

Class
 Coffee Bag
 Coffee Mug
 Donut

**Clear results**

Image	Category	Confidence Score
	Donut	0.91
	Donut	0.91
	Coffee Bag	0.90
	Coffee Bag	0.91
	Coffee Mug	0.91
	Coffee Mug	0.90
	Donut	0.02
	Coffee Bag	0.00
	Donut	0.04
	Coffee Bag	0.00

# Implement Watson Visual Recognition custom model in your Applications

- You can incorporate this Watson Visual Recognition Custom Classifier model into your applications using a variety of programming languages - Java, Node, Python, Ruby, Core ML
- Click on the **Implementation** tab to review the Code snippets

The screenshot shows the IBM Watson Studio interface with the 'Implementation' tab selected for a 'Coffee or Donut' model. The 'Associated Service' is listed as 'watson-vision-combined-jw'. The 'Code Snippets' section provides examples for various programming languages:

- API endpoint:** `https://gateway.watsonplatform.net/visual-recognition/api`
- Authentication:** `curl -u "apikey:{apikey}" "https://gateway.watsonplatform.net/visual-recognition/api/v3/{method}"`
- Classify an image (GET):** `curl -u "apikey:{apikey}" "https://gateway.watsonplatform.net/visual-recognition/api/v3/classify?url=https://watson-developer-cloud.github.io/doc-tutorial-downloads/visual-recognition/fruitbowl.jpg&version=2018-03-19&classifier_ids=CoffeeorDonut_46409573"`
- Classify an image (POST):** `curl -X POST -u "apikey:{apikey}" -F "images_file=@fruitbowl.jpg" -F "threshold=0.6" -F "classifier_ids=CoffeeorDonut_46409573" "https://gateway.watsonplatform.net/visual-recognition/api/v3/classify?version=2018-03-19"`

Use the code snippets below to classify images against your model. For reference, the full API specification is available [here](#)

In the IBM Cloud Dashboard, search for and open your instance of *Watson Visual Recognition* and navigate into the Service Credentials section. Copy your **apikey** for use in the curl examples below.

- **API endpoint**

```
https://gateway.watsonplatform.net/visual-recognition/api
```

- **Authentication**

```
curl -u "apikey:{apikey}" "https://gateway.watsonplatform.net/visual-recognition/api/v3/classify?version=2018-03-19"
```

- Classify an image (GET)

```
curl -u "apikey:{apikey}" "https://gateway.watsonplatform.net/visual-recognition/v3/analyze?api_key={apikey}&url=https://www.watsonplatform.net/assets/images/coffee-or-donuts/coffee-bags-coffee-mugs-and-yummy-donuts.jpg"
```

- Classify an image (POST)

```
curl -X POST -u "apikey:{apikey}" -F "images_file=@fruitbowl.jpg" -F "threshold=0.5" https://gateway.watsonplatform.net/visual-recognition/v3/analyze
```

## Congratulations

You have completed the Coffee or Donuts Visual Recognition Lab and have identified Coffee Bags, Coffee Mugs and yummy donuts.

## Visual Recognition - Additional References

- Locate and count items with object detection
- MAX Object Detection