

Project Documentation

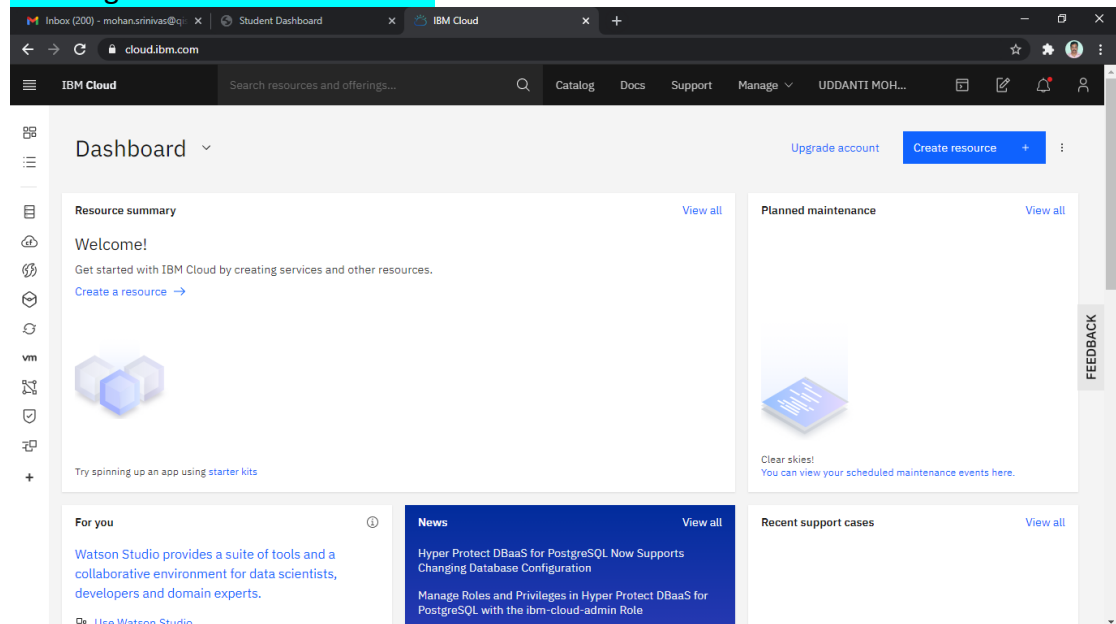
Project Title: Classify Images with IBM Watson Visual Recognition

1. IBM Watson Visual Recognition

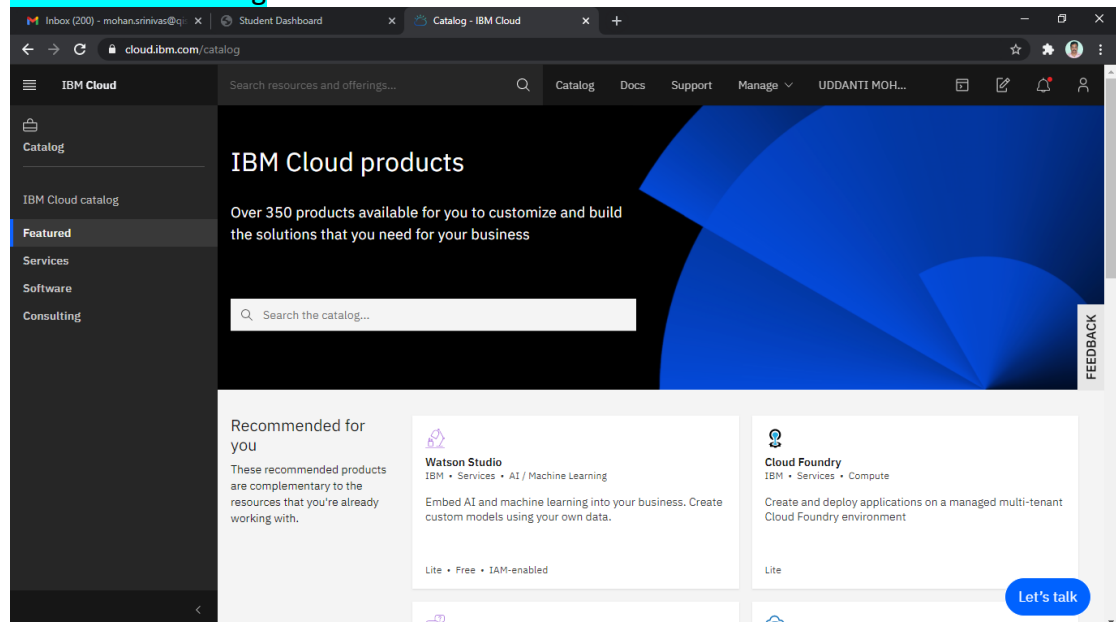
Introduction to IBM Watson Visual Recognition System

The IBM Watson Visual Recognition service uses learning algorithms to analyze images for content such as objects, scenes, and faces. Come learn how to create a Watson Visual Recognition modeler to automatically train a model to classify images for scenes, objects, or your custom content. We will explore a few examples of applying visual recognition models and accessing those models through external applications.

First Login to IBM Cloud Account



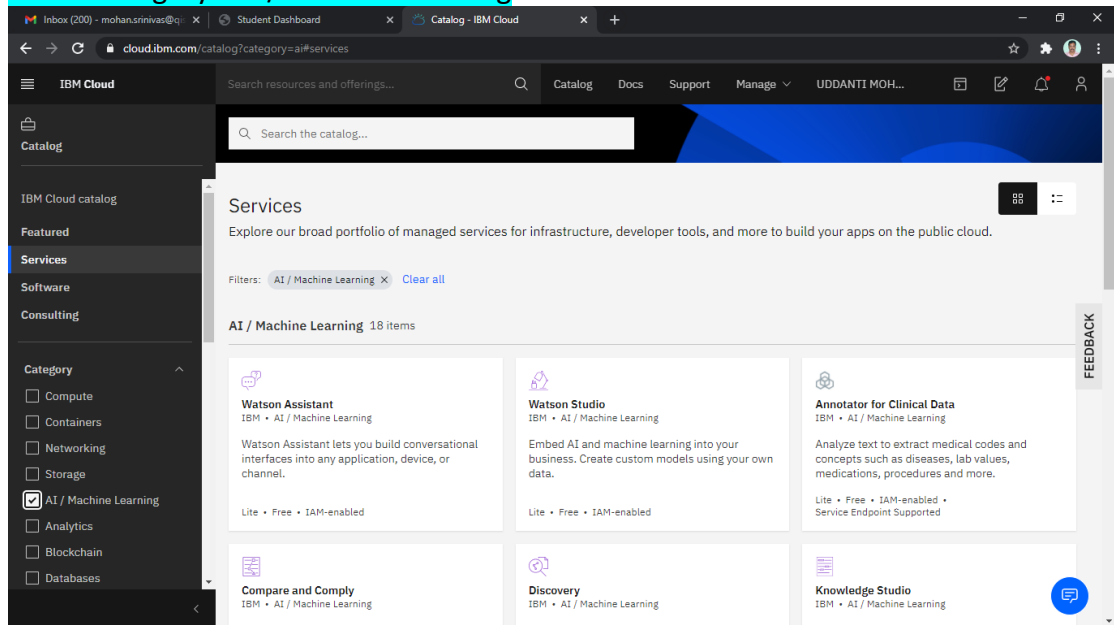
Use Watson Studio – Cloud based Click on the Catalog



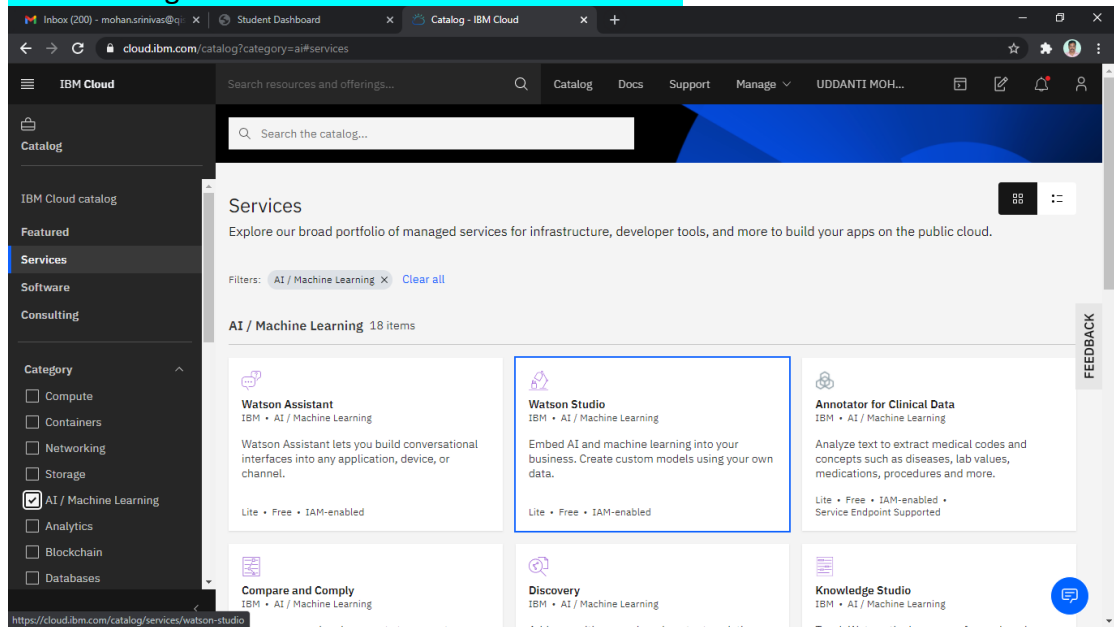
Classify Images with Watson Visual Recognition

Click Services

Select Category – AI/Machine Learning



To select Cognitive Service – Click on Watson Studio



After Clicking on Watson Studio

Classify Images with Watson Visual Recognition

The screenshot shows the IBM Cloud catalog page for Watson Studio. The 'Create' tab is active. Under 'Select a region', 'London' is chosen. The 'Lite' plan is selected, which is free. The summary on the right shows the service name as 'Watson Studio-1m'.

Plan	Features	Pricing
Lite	1 authorized user 50 capacity unit-hours monthly limit Environment = # of capacity units required per hour • 1 vCPU + 4 GB RAM = 0.5 • 2 vCPU + 8 GB RAM = 1 • 4 vCPU + 16 GB RAM = 2 • Decision Optimization = Environment + 5	Free

Summary

Watson Studio **Free**

Region: London
Plan: Lite
Service name: Watson Studio-1m
Resource group: Default

[Create](#)
[Add to estimate](#)
[View terms](#)

Under Create Tab
Select Region as Dallas under Lite Plan
no change to Service Name - Watson Studio-1m

The screenshot shows the IBM Cloud catalog page for Watson Studio. The 'Create' tab is active. Under 'Select a region', 'Dallas' is chosen. The 'Lite' plan is selected, which is free. The summary on the right shows the service name as 'Watson Studio-1m'.

Plan	Features	Pricing
Lite	1 authorized user 50 capacity unit-hours monthly limit Environment = # of capacity units required per hour • 1 vCPU + 4 GB RAM = 0.5 • 2 vCPU + 8 GB RAM = 1 • 4 vCPU + 16 GB RAM = 2 • Decision Optimization = Environment + 5	Free

Summary

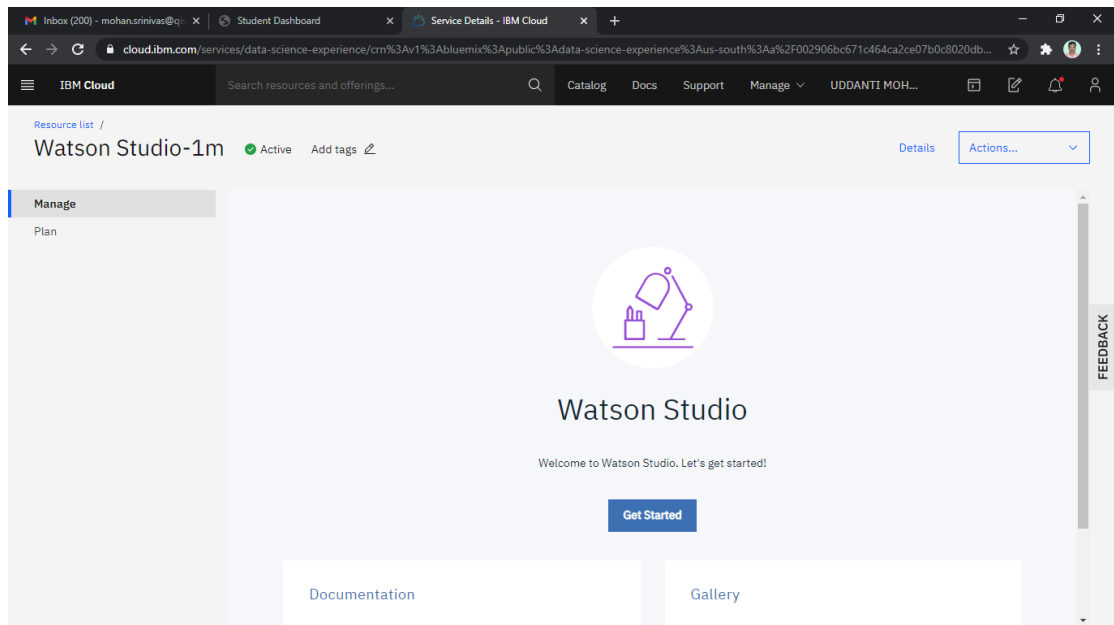
Watson Studio **Free**

Region: Dallas
Plan: Lite
Service name: Watson Studio-1m
Resource group: Default

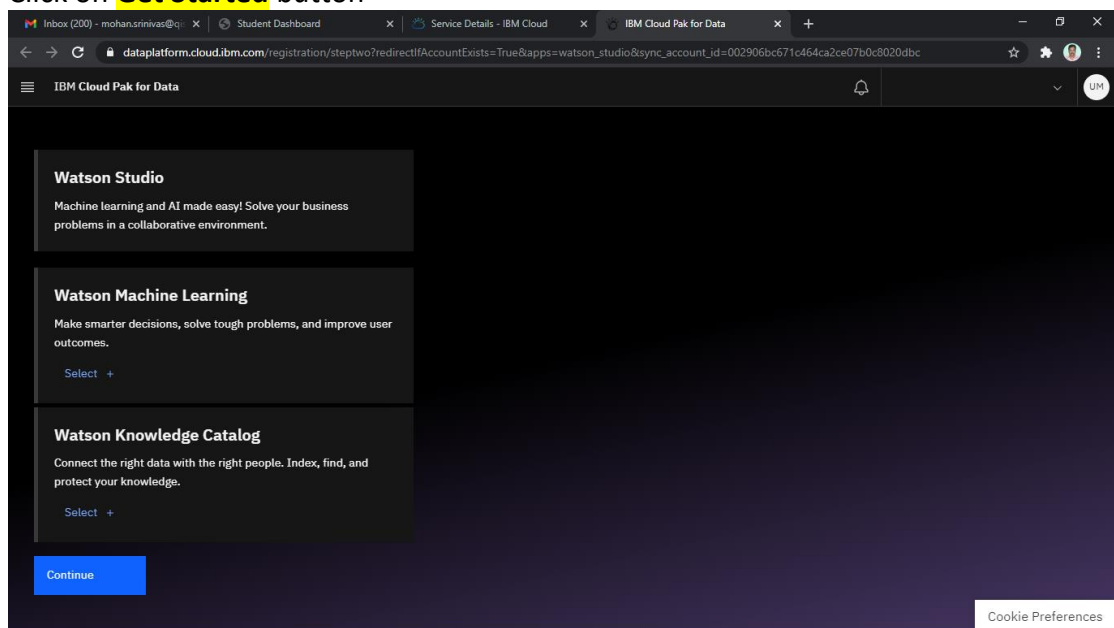
[Create](#)
[Add to estimate](#)
[View terms](#)

Click on Create
This create a new Watson Studio Service.

Classify Images with Watson Visual Recognition

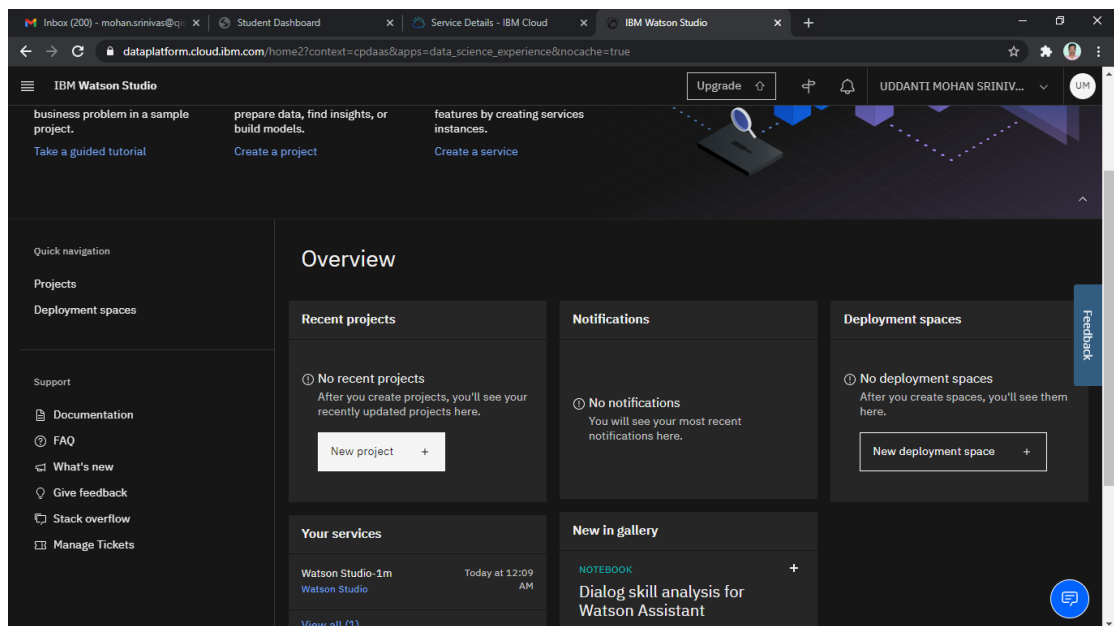
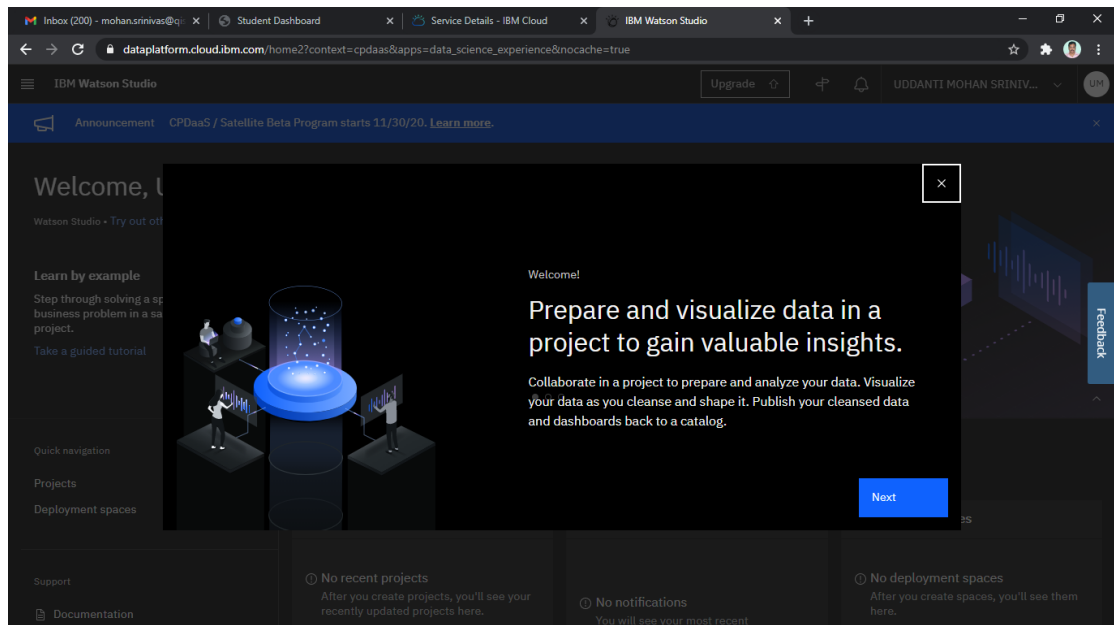


Click on **Get Started** button



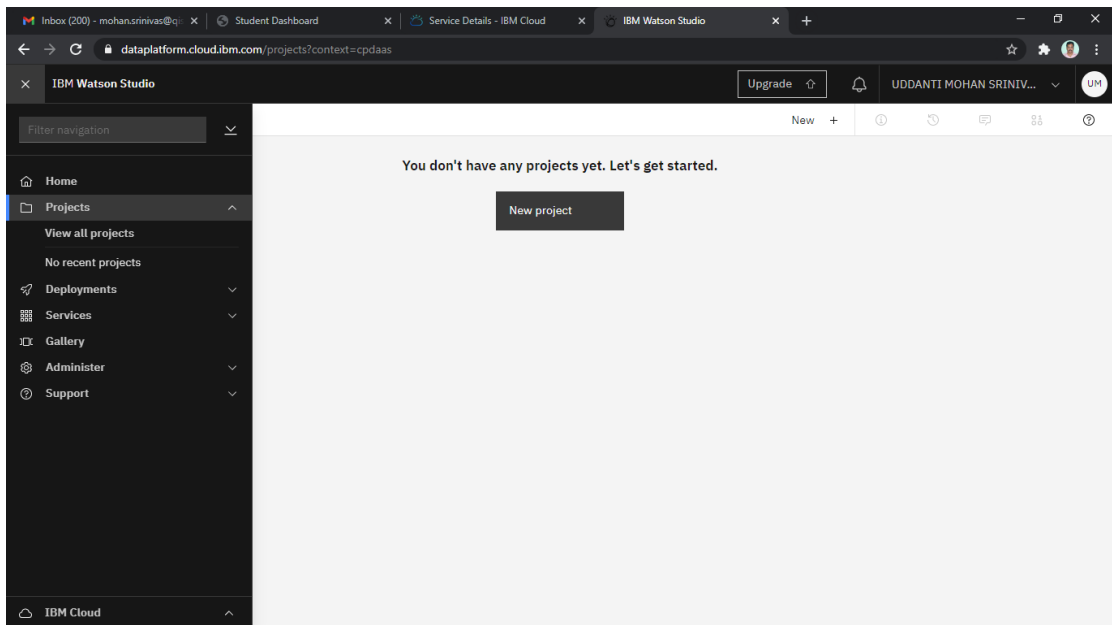
Click on Continue and in the next window Click on IBM Cloud Park for Data

Classify Images with Watson Visual Recognition

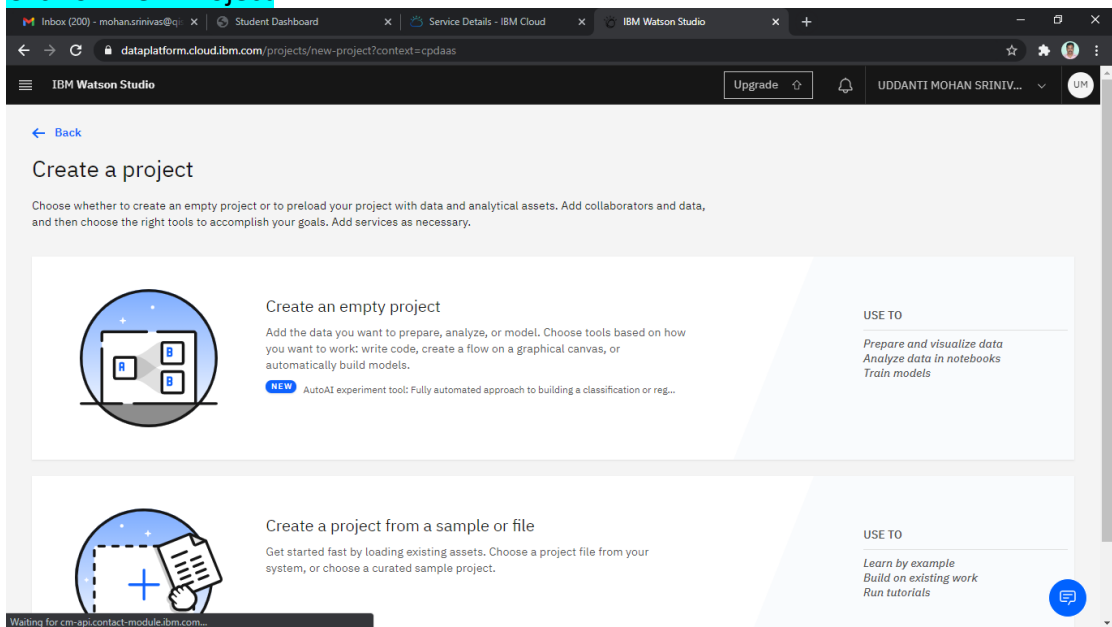


Click on Projects

Classify Images with Watson Visual Recognition



Click on New Project



Click on Create an empty project name it – classification

Classify Images with Watson Visual Recognition

The screenshot shows the 'New project' page in IBM Watson Studio. The browser tabs include 'Inbox (200) - mohansrinivas@...', 'Student Dashboard', 'Service Details - IBM Cloud', and 'IBM Watson Studio'. The URL is 'datapatform.cloud.ibm.com/projects/create-project?context=cpdaas'. The page has a dark header with the IBM Watson Studio logo, an 'Upgrade' button, a notification bell, and a user profile 'UDDANTI MOHAN SRINIV...'. The main content area is titled 'New project' and is divided into two columns. The left column, 'Define project details', has a 'Name' field with 'classification' entered, a 'Description' field with 'IBM Watson Studio Service having AI/Machine Learning with IBM Watson Visual Recognition', and a 'Choose project options' section with a checkbox 'Restrict who can be a collaborator' and a note 'Project includes integration with Cloud Object Storage for storing project assets.' The right column, 'Define storage', has a step 1 'Select storage service' with an 'Add' link and a step 2 'Refresh'. At the bottom right are 'Cancel' and 'Create' buttons.

Define project details

Name

classification

Description

IBM Watson Studio Service having AI/Machine Learning with IBM Watson Visual Recognition

Choose project options

☐ Restrict who can be a collaborator ⓘ

Project includes 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

We need Storage for Images
Create a Cloud Object Storage COS service
Click add storage in the same window

The screenshot shows the 'Cloud Object Storage' service page in IBM Watson Studio. The browser tabs include 'Inbox (200) - mohansrinivas@...', 'Student Dashboard', 'Service Details - IBM Cloud', and 'IBM Watson Studio'. The URL is 'datapatform.cloud.ibm.com/data/catalog/cloud-object-storage?context=cpdaas&target=cloud-object-storage&closeTab=true'. The page has a dark header with the IBM Watson Studio logo, an 'Upgrade' button, a notification bell, and a user profile 'UDDANTI MOHAN SRINIV...'. The main content area is titled 'Cloud Object Storage' and has a 'Create' button. The 'Pricing plan' section shows a table with one plan: 'Lite'. The 'Summary' sidebar on the right shows 'Cloud Object Storage' with 'Region: Global', 'Plan: Lite', 'Service name: Cloud Object Storage-me', and 'Resource group: Default'. At the bottom right is a 'Create' button and a 'View terms' link.

Services catalog /

Cloud Object Storage

Author: IBM • Date of last update: Sep 23, 2020 • [Docs](#) • [API Docs](#)

Create About

Pricing plan

Displayed prices do not include tax. Monthly prices shown are for country or region: United States

Plan	Features	Pricing
Lite	<p>1 COS Service Instance</p> <p>Storage up to 25 GB/month</p> <p>Up to 2,000 Class A (PUT, COPY, POST, and LIST) requests per month</p> <p>Up to 20,000 Class B (GET and all others) requests per month</p> <p>Up to 10 GB/month of Data Retrieval</p> <p>Up to 5GB of egress (Public Outbound)</p> <p>Applies to aggregate total across all storage bucket classes</p> <p>The Lite service plan for Cloud Object Storage includes Regional and Cross Regional resiliency, flexible data classes, and built in security.</p> <p>Lite plan services are deleted after 30 days of inactivity.</p>	Free

Create

View terms

Now Click on **Create** button and leave the COS Service name as it is
Cloud Object Storage Service Name is - Cloud Object Storage-me

Classify Images with Watson Visual Recognition

New project

Define project details

Name
classification

Description
IBM Watson Studio Service having AI/Machine Learning with IBM Watson Visual Recognition

Choose project options

☐ Restrict who can be a collaborator ⓘ

Project includes 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

Now Click Refresh and COS is now Visible i.e., Loaded

New project

Define project details

Name
classification

Description
IBM Watson Studio Service having AI/Machine Learning with IBM Watson Visual Recognition

Choose project options

☐ Restrict who can be a collaborator ⓘ

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

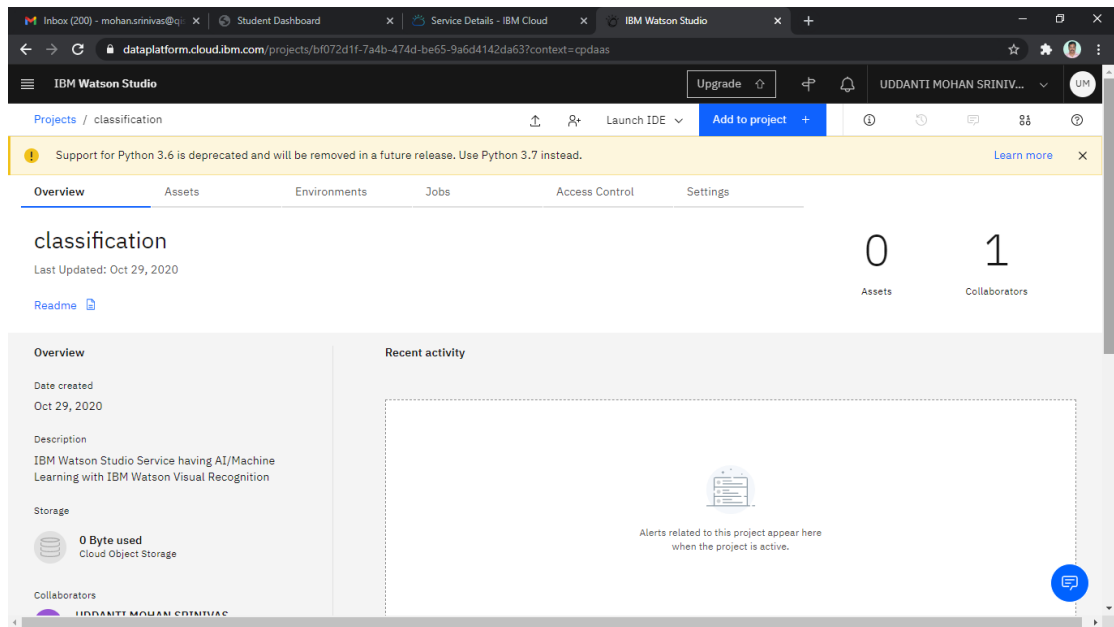
Storage

Cloud Object Storage-me

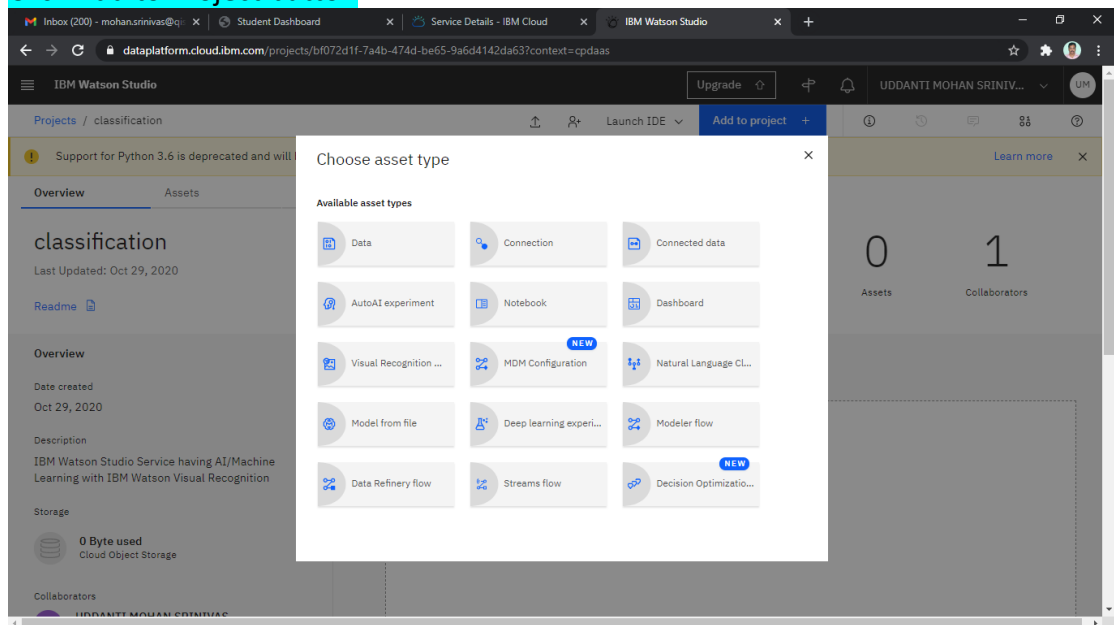
Cancel Create

Once you have Project and COS click on Create button

Classify Images with Watson Visual Recognition

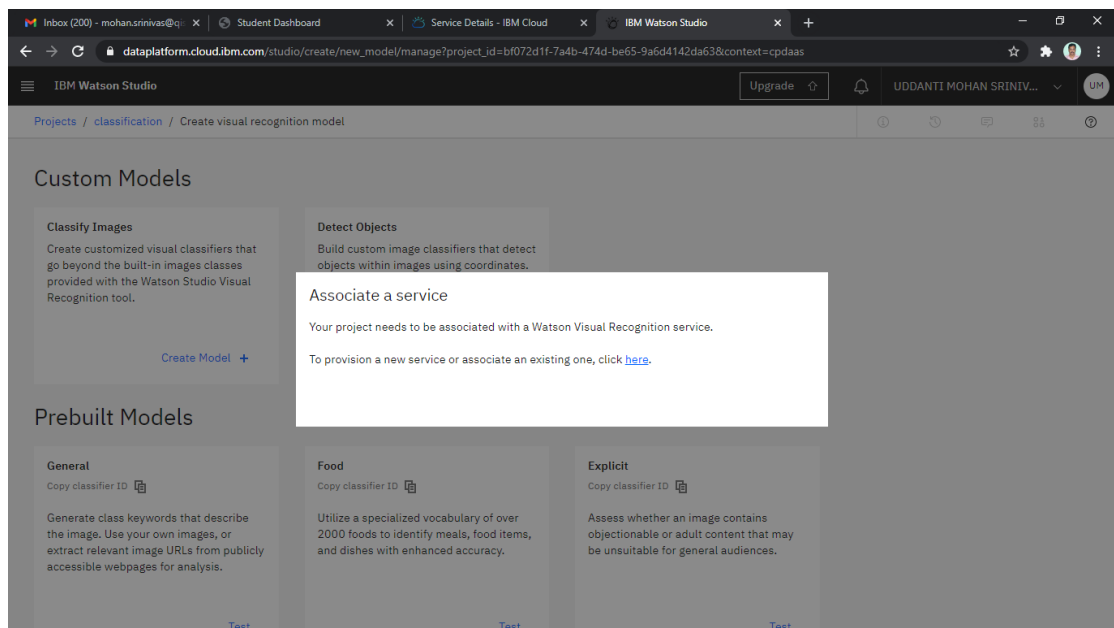
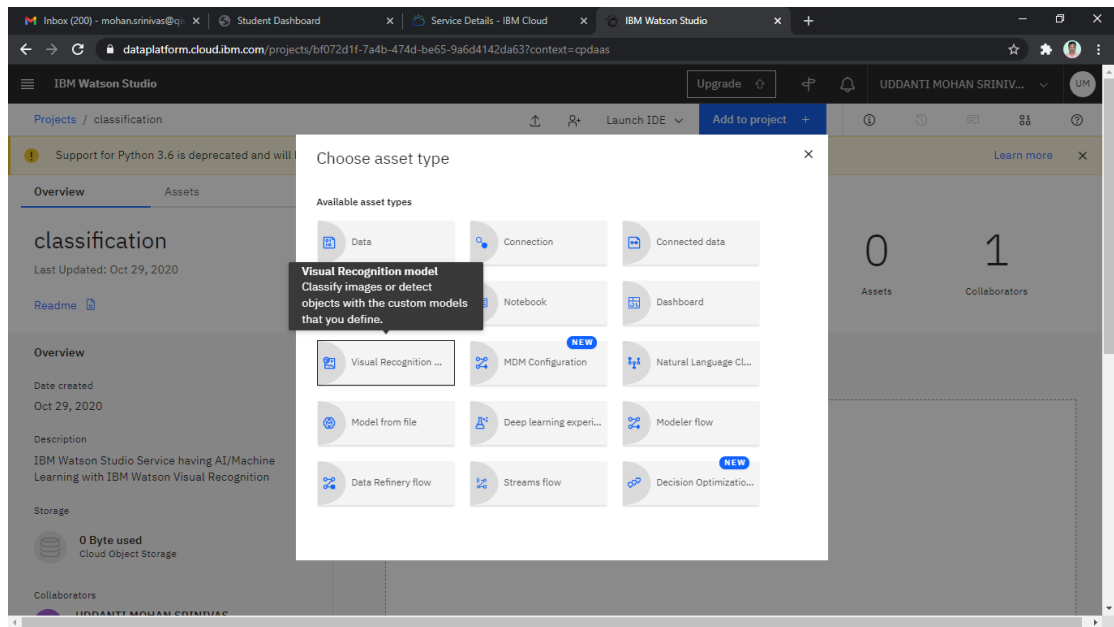


Now Add to Project - Visual Recognition Service
Click Add to Project button



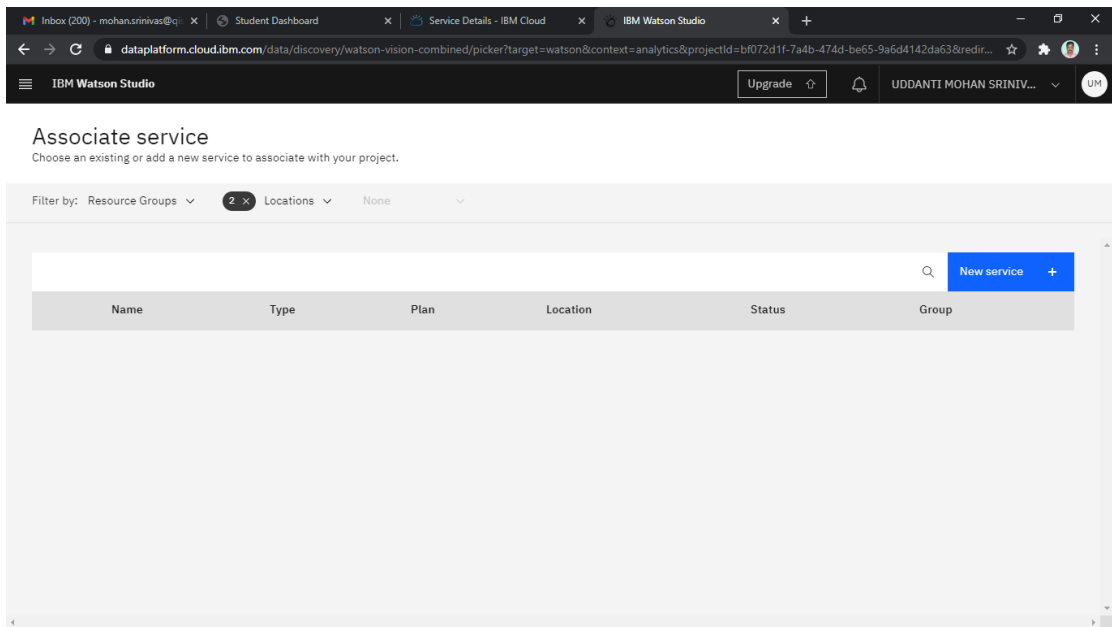
Select the Asset Visual Recognition Model

Classify Images with Watson Visual Recognition

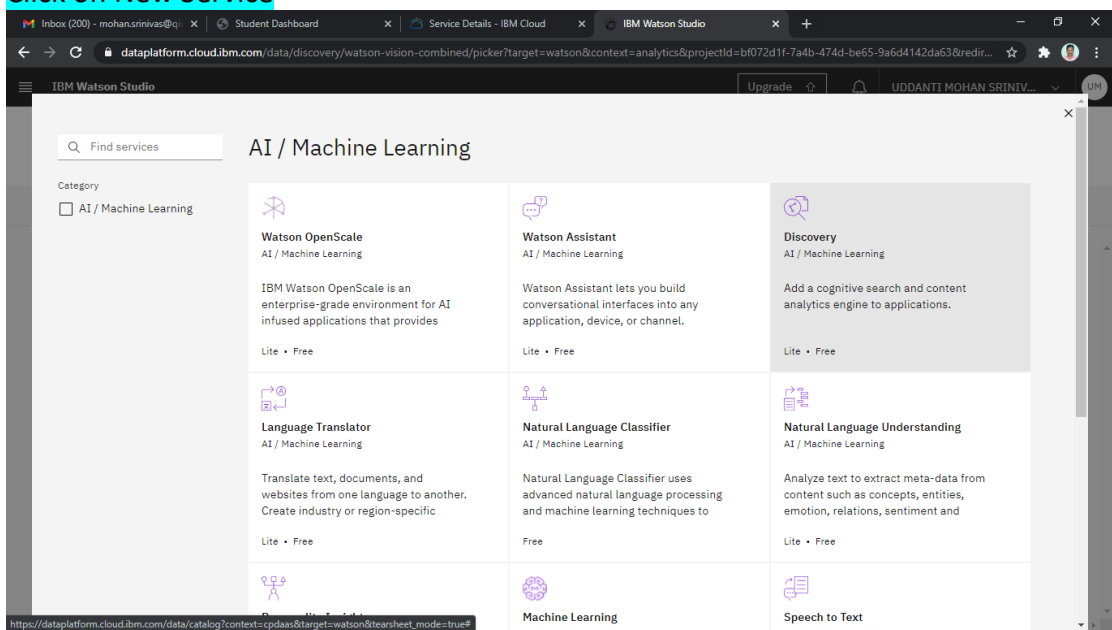


Click here on the popup window to Associate Service i.e., add Watson Visual Recognition Service

Classify Images with Watson Visual Recognition



Click on New Service



Now You will Find various Cognitive Services.
Select and Click on the Visual Recognition Service

Classify Images with Watson Visual Recognition

Services catalog /

Visual Recognition

Author: IBM • Date of last update: Oct 14, 2020 • [Docs](#) • [API Docs](#)

Create About

Select a region

Select a region

Dallas

Pricing plan

Displayed prices do not include tax. Monthly prices shown are for country or region: 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)	Free

Summary

Visual Recognition

Region: Dallas
Plan: Lite
Service name: Visual Recognition-ax
Resource group: Default

Create

[View terms](#)

Region is Dallas for Visual Recognition as it is.
Name of the Service is same as it is. - Visual Recognition-ax
Now Click on Create button

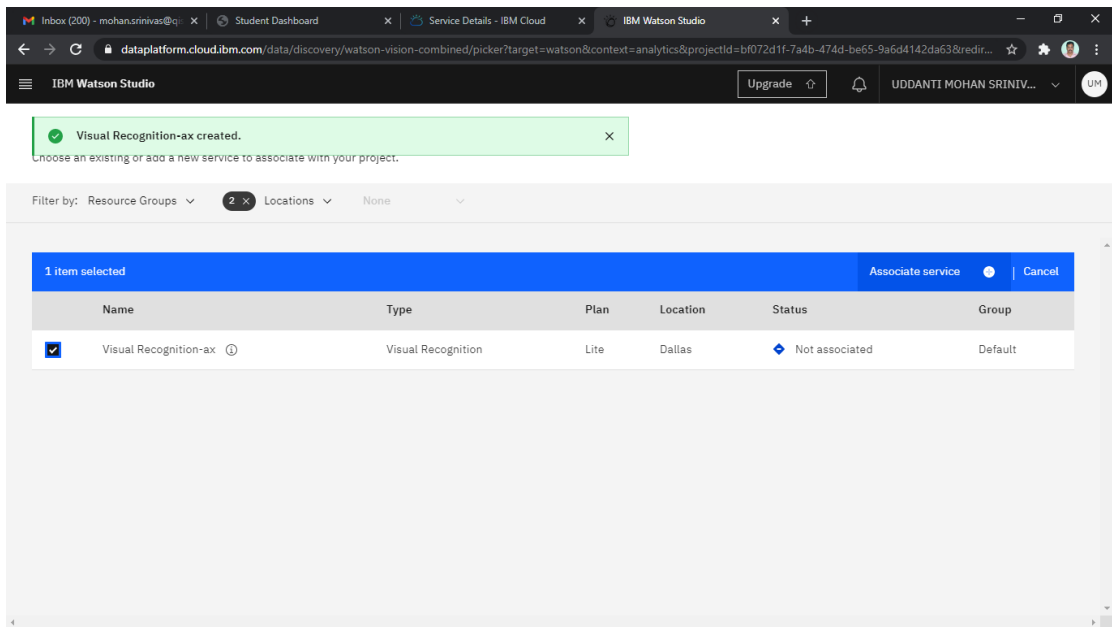
Visual Recognition-ax created.
Choose an existing or add a new service to associate with your project.

Filter by: Resource Groups 2 Locations None

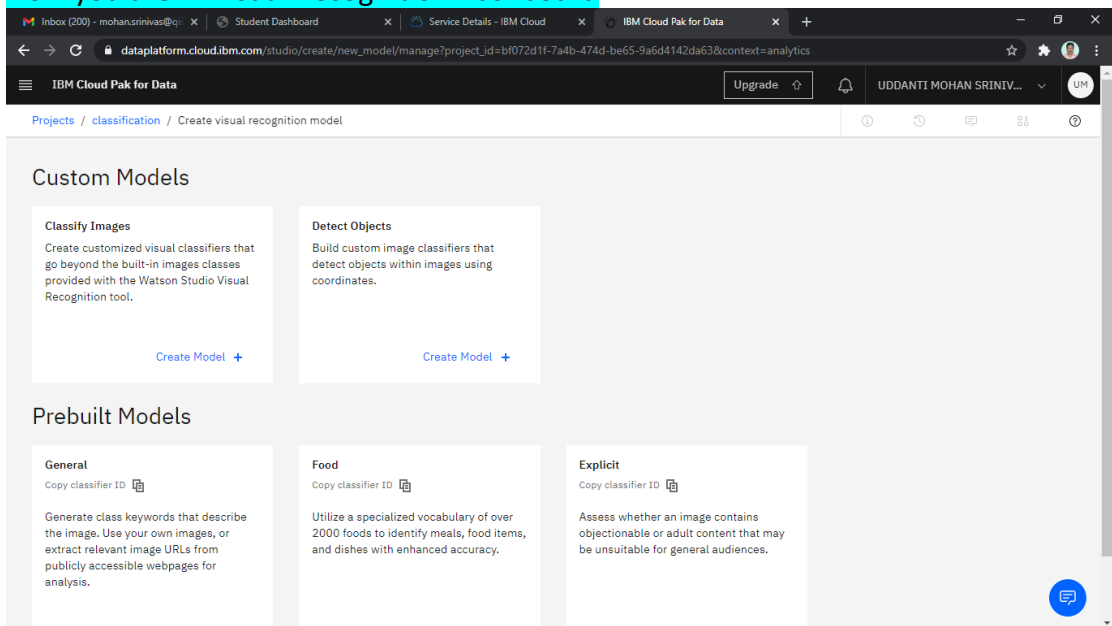
Name	Type	Plan	Location	Status	Group
<input type="checkbox"/> Visual Recognition-ax ⓘ	Visual Recognition	Lite	Dallas	Not associated	Default

Now Click on the Checkbox of the Visual Recognition Service
And then Select Associate Service on the top of this

Classify Images with Watson Visual Recognition



Now you are in Visual Recognition Dashboard

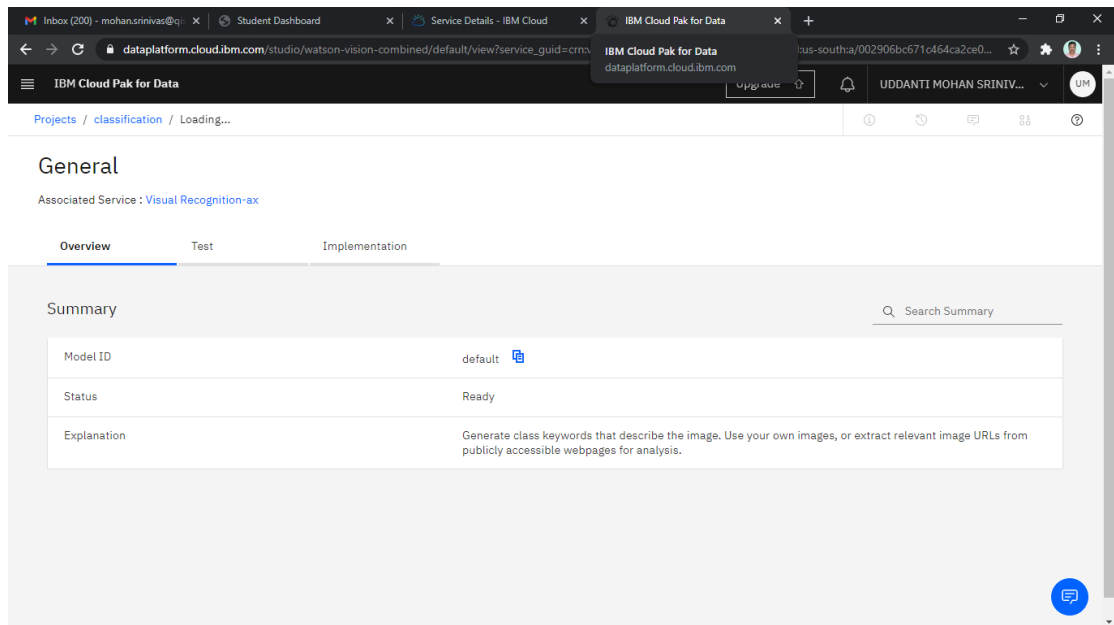


Here we have Custom Models and Prebuilt Models

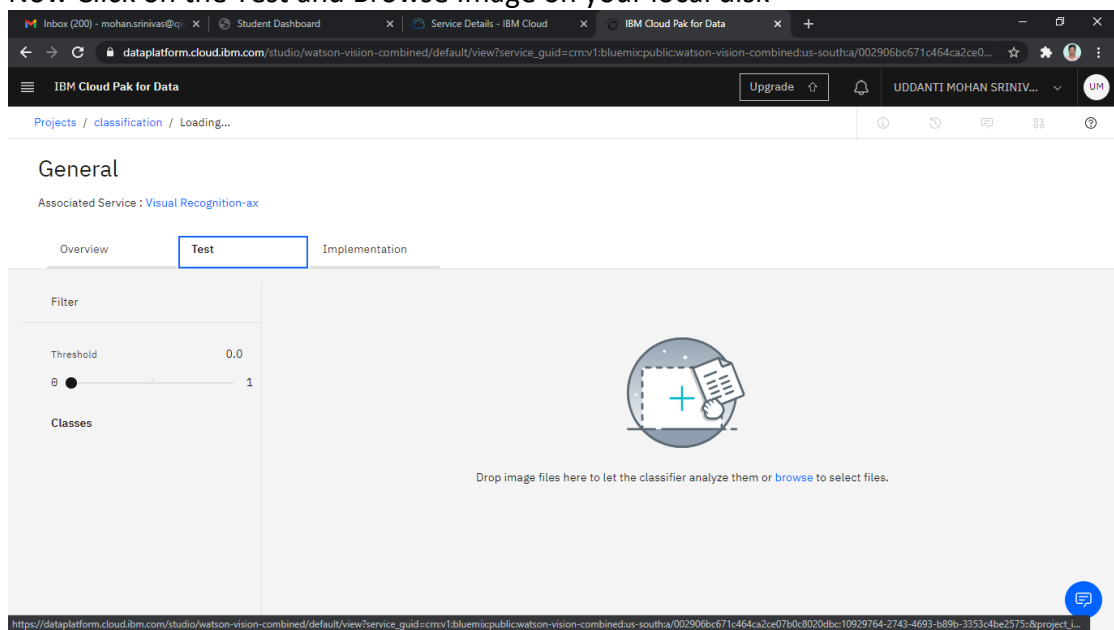
Now for testing we use Prebuilt Models

Here we have Three Prebuilt Models – General, Food, Explicit
Now Select General and Click Test

Classify Images with Watson Visual Recognition



Now Click on the Test and Browse Image on your local disk



Click on Browse to load any image file

Classify Images with Watson Visual Recognition

Projects / classification / Loading...

General

Associated Service : Visual Recognition-ax

Overview **Test** Implementation

Filter

Threshold 0.0

Classes

- ☐ animal
- ☐ cart
- ☐ cattle
- ☐ greenishness color
- ☐ oxcart
- ☐ vehicle
- ☐ wagon
- ☐ wheeled vehicle

Results:

greenishness color	0.98
cart	0.97
wagon	0.97
wheeled vehicle	0.97
vehicle	0.97
oxcart	0.97

classifier_ids='default'

You can apply Threshold example take 0.61

Clear and upload browse the image

Projects / classification / Loading...

General

Associated Service : Visual Recognition-ax

Overview **Test** Implementation

Filter

Threshold 0.61

Classes

- ☐ bread
- ☐ bun
- ☐ food
- ☐ food product
- ☐ kaiser roll
- ☐ reddish brown color

Results:

reddish brown color	0.93
food product	0.51
food	0.51
bun	0.51
bread	0.51
kaiser roll	0.50

Click Implementation Part:

This can be Device Level, Application Level

Use APIs or SDK to implement this

Code Snippets:

Results are Those values in JSON format

Python Code Snippet:

Use the code snippets below to classify images against your model.

For reference, the full API specification is available [here](#).

pip

```
pip install --upgrade "watson-developer-cloud>=2.4.1"
```

Authentication

```
from watson_developer_cloud import VisualRecognitionV3
```

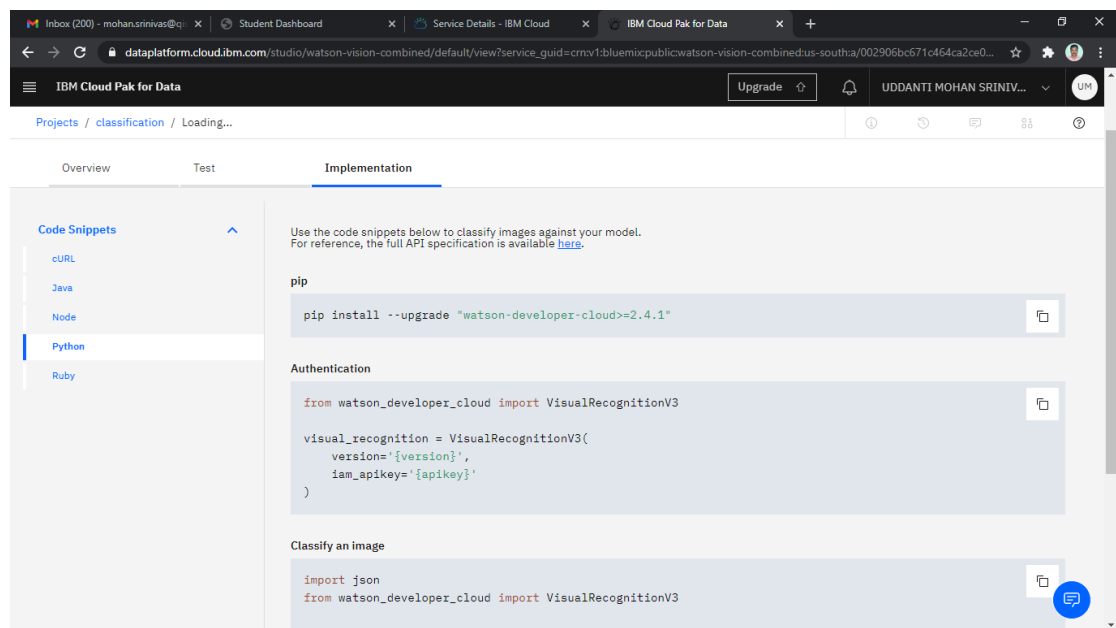
Classify Images with Watson Visual Recognition

```
visual_recognition = VisualRecognitionV3(  
    version='{version}',  
    iam_apikey='{apikey}'  
)
```

Classify an image

```
import json  
from watson_developer_cloud import VisualRecognitionV3  
  
visual_recognition = VisualRecognitionV3(  
    '2018-03-19',  
    iam_apikey='{iam_api_key}')
```

```
with open('./fruitbowl.jpg', 'rb') as images_file:  
    classes = visual_recognition.classify(  
        images_file,  
        threshold='0.6',  
        classifier_ids='default').get_result()  
print(json.dumps(classes, indent=2))
```



API key will present in the credentials of the service

Key name	Date created,	Actions
wdp-writer	2020-10-28T19:52:56.799397405Z	

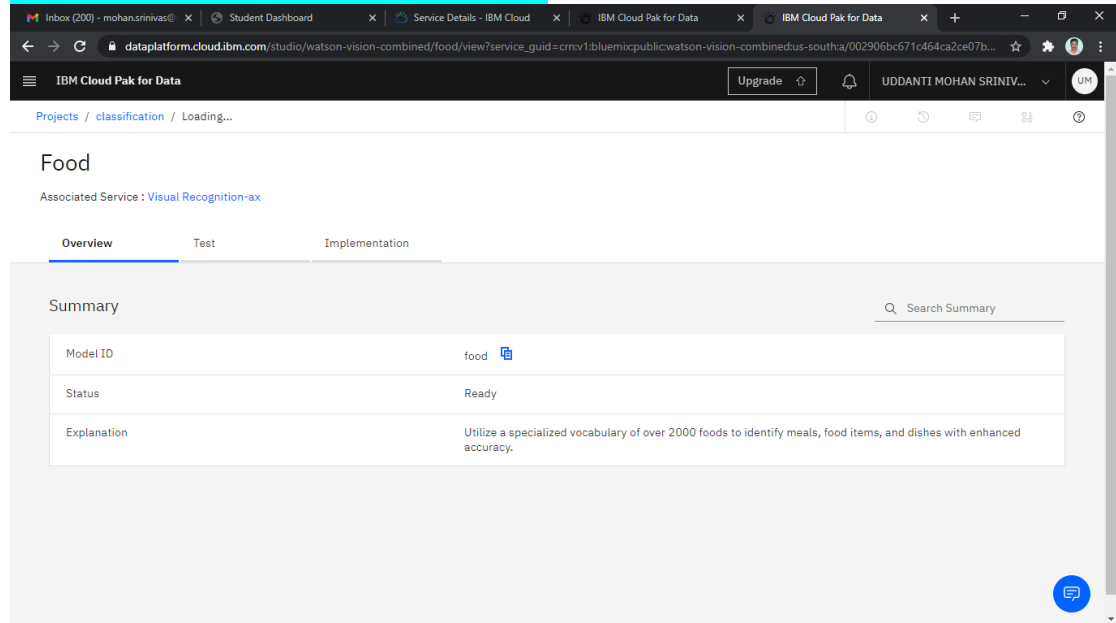
```
{  
  "apikey": "EdBkYl1a42ynAYDrZLgv9d_ryvhnRz3NNtGI02McUDLz",  
  "iam_apikey_description": "Auto-generated for key 2e8c3f92-c88b-418d-91e4-70713a019bad",  
  "iam_apikey_name": "wdp-writer",  
  "iam_role_crn": "crn:v1:bluemix:public:iam:::serviceRole:Writer",  
  "iam_serviceid_crn": "crn:v1:bluemix:public:iam-identity::a/002906bc671c464ca2ce07b0c8020dbc::serviceid:ServiceId-2e4c2c83-d86b-40de-a934-24b44cd669db",  
}
```


Classify Images with Watson Visual Recognition

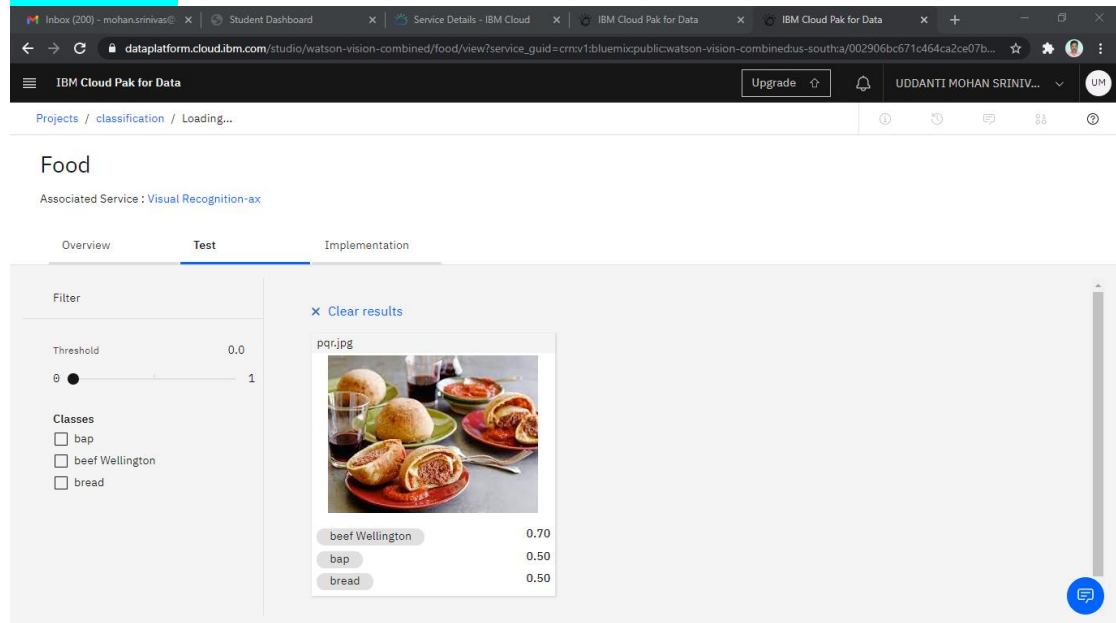
```
"url": "https://api.us-south.visual-  
recognition.watson.cloud.ibm.com/instances/10929764-2743-4693-b89b-  
3353c4be2575",  
}
```

Now Check Prebuilt Model – Food

Right Click on the Associate Service – Visual Recognition and Open in New tab
Select Prebuilt Food Model and Click Test



Browse and Load a Food based Image And Result is



classifier_ids='food'

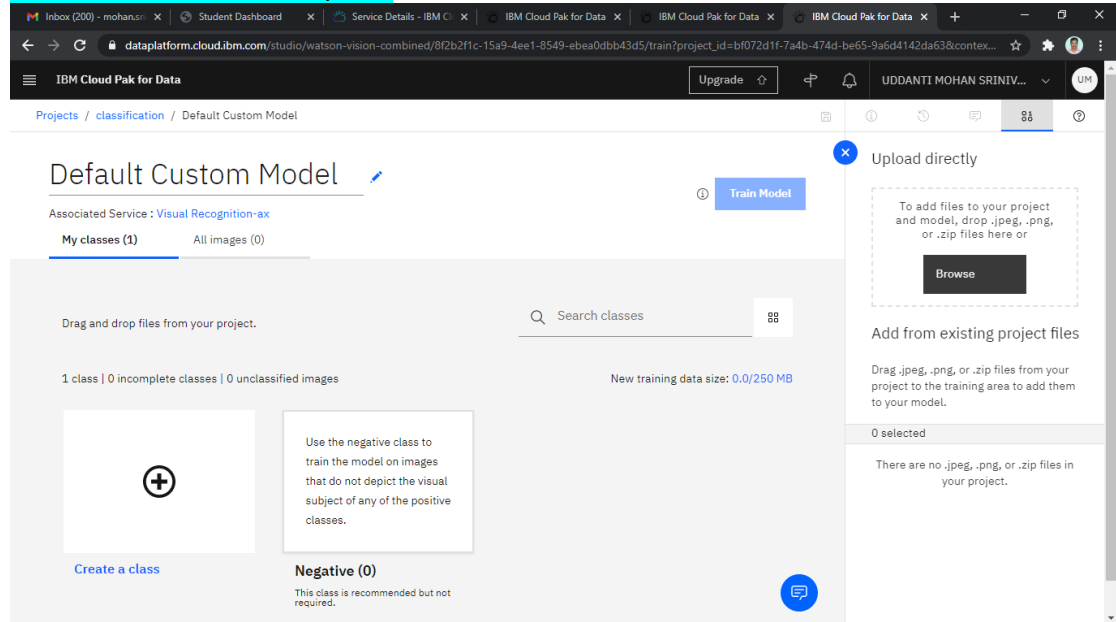
Classify Images with Watson Visual Recognition

Now we go for Custom Build Models

To build a custom model we need some images for training and testing.
Right Click on the Associate Service – Visual Recognition and Open in New tab

Select Classify Images in Custom Models

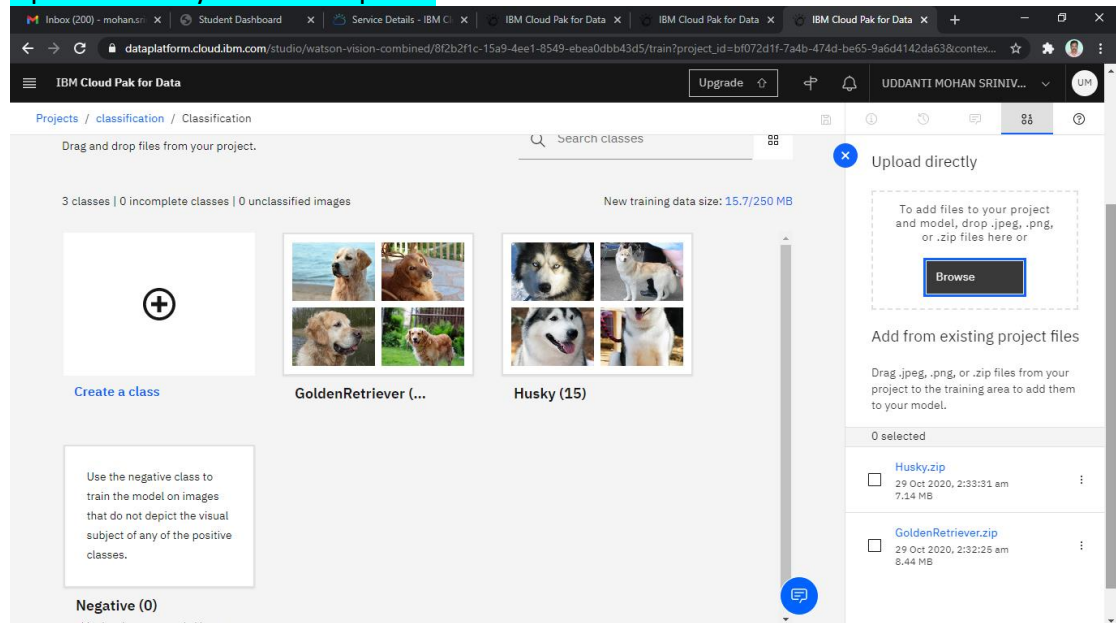
Click on Create Model Option



First change the name of the Model

Default Custom Model is edited name it as **Classification**

Upload directly - Browse Zip files



Now click on Training button

Classify Images with Watson Visual Recognition

The screenshot shows the IBM Cloud Pak for Data interface for Watson Visual Recognition. The top navigation bar includes tabs for 'Inbox (200) - mohans...', 'Student Dashboard', 'Service Details - IBM C...', and multiple instances of 'IBM Cloud Pak for Data'. The main header displays the URL 'dataplatfom.cloud.ibm.com/studio/watson-vision-combined/...' and the user 'UDDANTI MOHAN SRINIV...'. The breadcrumb trail is 'Projects / classification / Classification / Edit and retrain'. The page title is 'Classification' with the associated service 'Visual Recognition-ax'. A 'Train Model' button is visible. Below the title, there are tabs for 'My classes (3)' and 'All images (30)'. The main area shows a 'Drag and drop files from your project.' instruction, a search bar for 'Search classes', and a status '3 classes | 0 incomplete classes | 0 unclassified images'. Two classes are visible: 'GoldenRetriever (...)' and 'Husky (15)'. A 'New training data size: 0.0/250 MB' indicator is present. On the right, a sidebar shows a list of files: 'Husky.zip' (29 Oct 2020, 2:33:31 am, 7.14 MB) and 'GoldenRetriever.zip' (29 Oct 2020, 2:32:25 am, 8.44 MB). Two notifications are displayed: 'Training successful' (Timestamp 2:53:29 AM) and 'Model training started' (Timestamp 2:41:18 AM).

Now click here to view and test custom model:

The screenshot shows the IBM Cloud Pak for Data interface for Watson Visual Recognition, specifically the 'Classification' page. The top navigation bar is the same as the previous screenshot. The breadcrumb trail is 'Projects / classification / Classification'. The page title is 'Classification' with the associated service 'Visual Recognition-ax'. There are tabs for 'Overview', 'Test', and 'Implementation', with 'Overview' selected. The main area shows a 'Summary' section with a search bar 'Search Summary'. Below the search bar is a table with the following data:

ModelID	Classification_1044301521
Status	Ready
Explanation	This model is ready for use.
Created on	10/29/2020, 2:41:46 AM
Updated on	10/29/2020, 2:41:46 AM
Number of classes	2
Number of images	30

Now test
Select / Browse the Test1 Image

Classify Images with Watson Visual Recognition

The screenshot shows the IBM Cloud Pak for Data interface for the Watson Visual Recognition service. The page is titled "Classification" and is associated with the service "Visual Recognition-ax". The "Test" tab is selected, showing a filter panel on the left with a threshold slider at 0.0 and two classes: "GoldenRetriever" and "Husky". The main area displays a test image "test1.jpg" of a Golden Retriever, with classification results: "GoldenRetriever" at 0.92 and "Husky" at 0.00. An "Edit and Retrain" button is visible in the top right corner.

Open in new browser window
Select / Browse the Test2 Image

The screenshot shows the IBM Cloud Pak for Data interface for the Watson Visual Recognition service, specifically the "Custom Models" section. The "Overview" tab is selected, showing three model categories: "Classify Images", "Detect Objects", and "Classification". The "Classification" model is highlighted, showing its status as "Ready", model type as "Classification", and date created as "10/29/2020". Below the custom models, there is a section for "Prebuilt Models" with three options: "General", "Food", and "Explicit".

classifier_ids=Classification_1044301521

Classify Images with Watson Visual Recognition

Browser tabs: Inbox (200) - mch..., Student Dashboa..., Service Details - II..., IBM Cloud Pak for..., IBM Cloud Pak for..., IBM Cloud Pak for..., IBM Cloud Pak for... | dataplatform.cloud.ibm.com/studio/watson-vision-combined/Classification_1044301521/view?service_guid=crnv1:bluemixpublicwatson-vision-combined:us-south/a/00290... | IBM Cloud Pak for Data | Upgrade | UDDANTI MOHAN SRINIV... | UM

Projects / classification / Classification

Classification

Associated Service : [Visual Recognition-ax](#) Edit and Retrain

Overview **Test** Implementation

Filter

Threshold 0.0

0 1


Classes

☐ GoldenRetriever

☐ Husky

[Clear results](#)

test2.jpg



Husky	0.92
GoldenRetriever	0.03

Chat icon