Cloud Application Development – Phase_5

Image Recognition Using IBM Cloud Visual Recognition

Pre-reqiurements and Things to know:

Definition:

This project aims to build an image recognition system powered by IBM Cloud Visual Recognition. The objective is to create a user-friendly platform allowing users to upload images, with the system providing precise classifications and descriptions of the content. This innovation will empower users to craft immersive visual narratives, harnessing AI-generated captions to strengthen their connection with the audience through captivating visuals and compelling storytelling

Design Thinking:

1. Image Recognition Setup: Set up the IBM Cloud Visual Recognition service and obtain the necessary API keys.

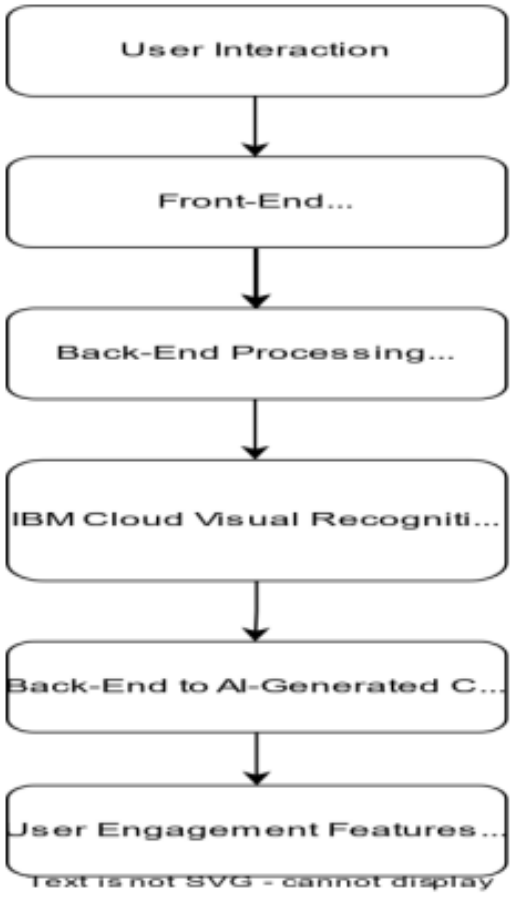
2. User Interface: Design a user-friendly interface for users to upload images and view the AIgenerated captions.

3. Image Classification: Implement the image classification process using the IBM Cloud Visual Recognition API.

4. AI-Generated Captions: Integrate natural language generation to create captions for the recognized images.

5. User Engagement: Design features to allow users to explore, save, and share their enhanced images.

Flow Diagram:



1: Define Requirements

- Objective: Determine the goal of your image recognition system, such as identifying objects, people, or scenes.
- Accuracy: Decide on the desired level of accuracy and performance.

2: Data Collection and Preparation

- Data Collection: Gather a dataset of labeled images.
- Annotation: Use tools like Labelbox or RectLabel to annotate images.
- Preprocessing: Utilize Python libraries like OpenCV for image resizing and normalization.

3: Model Development

- Deep Learning Framework: Choose TensorFlow or PyTorch for building your image recognition model.
- Training: Use GPU-enabled cloud instances (e.g., AWS EC2 with GPU) for faster training.
- Training Data: Feed your model with the labeled dataset.

4: Model Evaluation and Tuning

- Metrics: Evaluate model performance using metrics like accuracy, precision, recall, and F1 score.
- Hyperparameter Tuning: Employ AWS SageMaker Hyperparameter Tuning for optimization.

5: Cloud Deployment

- Cloud Platform: Select a cloud provider (e.g., AWS, Azure, Google Cloud).
- Containerization: Use Docker to containerize your model.

- Serverless: Consider AWS Lambda for cost-effective, scalable deployment.

6: Application Development

- Web App: Build a web application using JavaScript, React, Node.js, HTML/CSS.
- Mobile App: Develop a mobile app with Android Studio or Xcode.

7: Cloud Service Integration

- IAM: Implement Identity and Access Management (IAM) for user authentication.
- Monitoring: Use cloud monitoring tools like AWS CloudWatch or Azure Monitor.
- Scalability: Utilize auto-scaling and load balancing services.

8: Continuous Improvement

- Model Updates: Regularly update the model based on user feedback and changing requirements.
- Maintenance: Continuously monitor and maintain the application for performance and security.

Steps for Creating Image Recognition Project Using IBM Visual Recognition:

1. Create an IBM Cloud Account

- Sign up for IBM Cloud
  - Go to Create a free account on IBM Cloud
  - Enter the detail like email, name, etc
  - Click Create Account to create your IBM Cloud account.
- Confirm your email address
  - Check your email, and in the email that was sent to you, click Confirm Account
- Login to your IBM Cloud account
  - On the Log in to IBM Cloud page, in the ID box, enter your email address and then click Continue

2. Create a Watson Studio Resource

- Add Watson Studio as a resource
  - On the Dashboard click Create Resource
  - In the Catalog, check AI
  - In the list of Services, click Watson Studio
  - On the Watson Studio page select the region closest to you verify that the Liter e plan
  - When the Watson Studio resource is succesfully created you will see the Watson Studio Page.Click Get Started.You will see this message when Watson Studio is succesfully set up for you.

3. Create a project

❖ Create an empty project

- On the Watson Studio Welcome page, click Create a project
- On the Create a project page, click Create an empty project.
- On the New project page, enter a Name and Description for your project.
- You must define storage for your project before you can create it. Under Select storage service, click Add.
- On the Cloud Object Storage page, verify that Lite is selected, and then click Create
- In the Confirm Creation box, click Confirm
- On the New project page, under Define storage, click Refresh, and then click Create.

4. Add a Watson VR Service instance

❖ Add the Visual Recognition Service

- To add services to the project, click Add to project.
- In the Choose asset type box, click Visual Recognition.
- In the Associate a service box, click here
- On the Visual Recognition page, verify that Lite is selected, and then click Create.
- In the Confirm Creation box, click Confirm.

❖ Analyze images with Watson VR

- To analyze your images, on the Models page, under Pre Built Models, in the General box,click Test
- On the General page, click the Test tab

- To upload images, on the Test tab, click Browse
- Select the images you want to upload and then click Open.

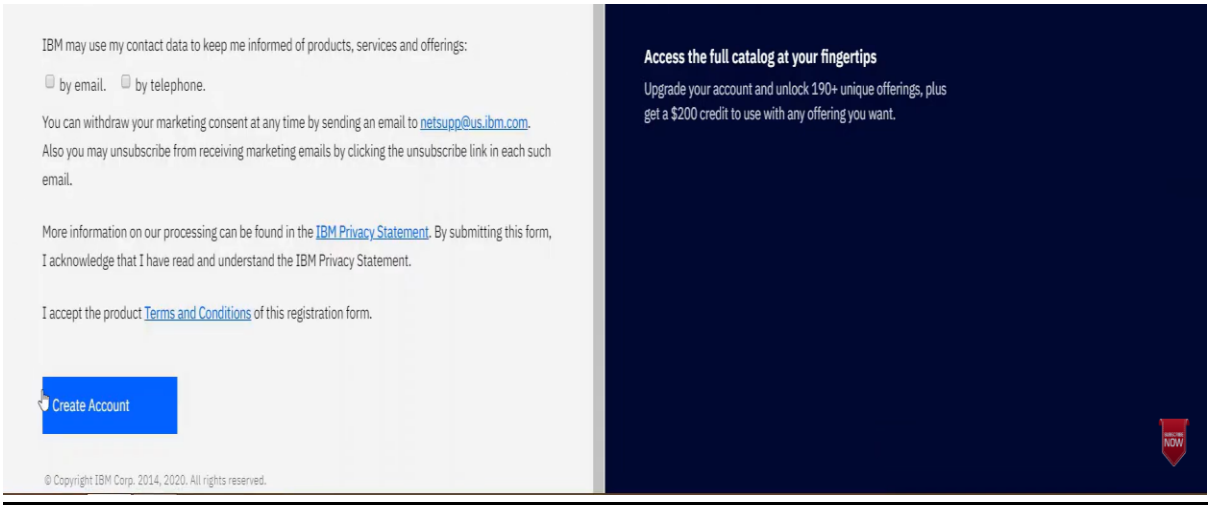
5.Add or upload images

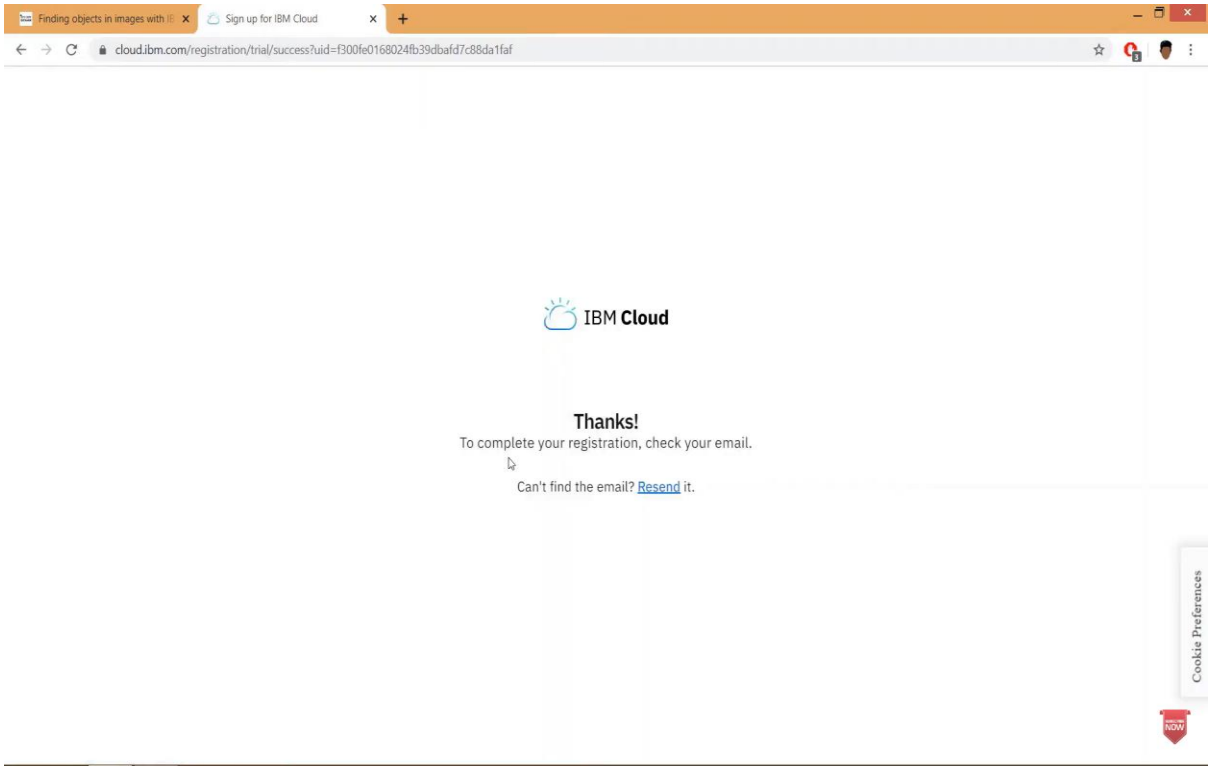
- Click on any prebuilt models
- Upload any sample images
- The main thing is to upload atleast 10 images

6.Result on Recognition

- Click on test
- IBM Watson gave an caption on all the images you upload

Screenshots:




Finding objects in images with IB
Sign up for IBM Cloud
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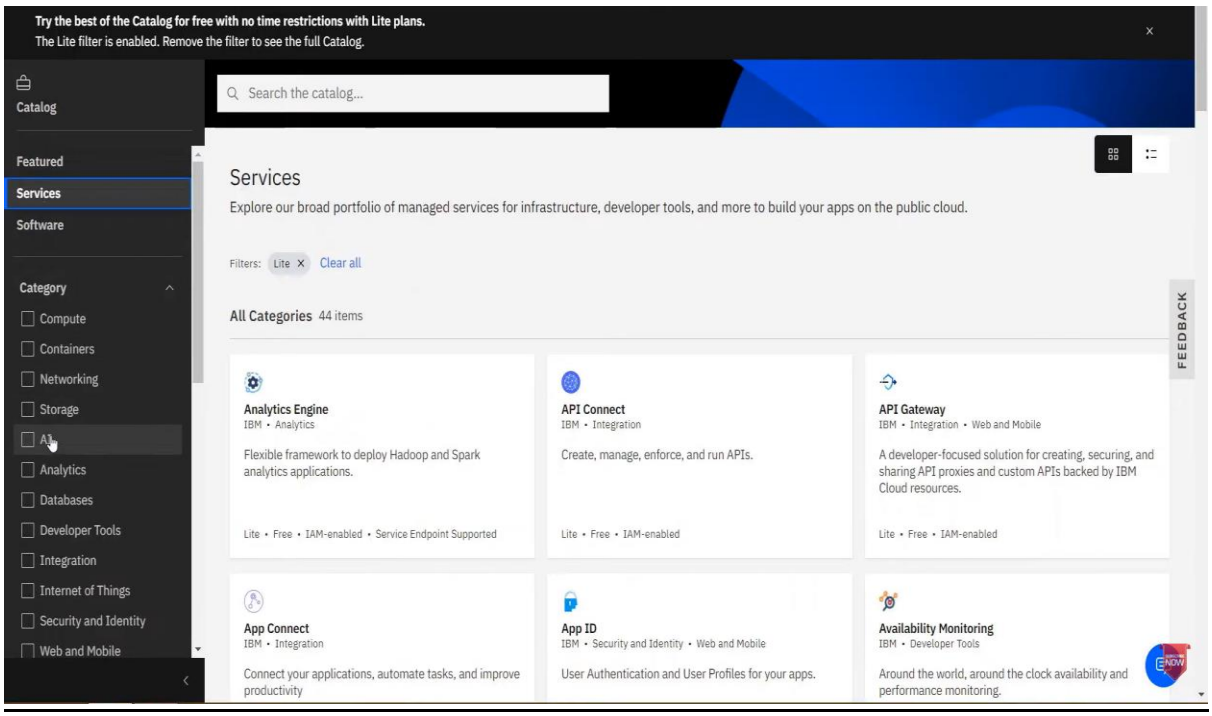
IBM Cloud
Thanks!
To complete your registration, check your email.
Can't find the email? Resend it.
Cookie Preferences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Explore our broad portfolio of managed services for infrastructure, developer tools, and more to build your apps on the public cloud.
Filters: Lite
Clear all
All Categories 44 items
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IBM • Security and Identity • Web and Mobile
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Availability Monitoring
IBM • Developer Tools
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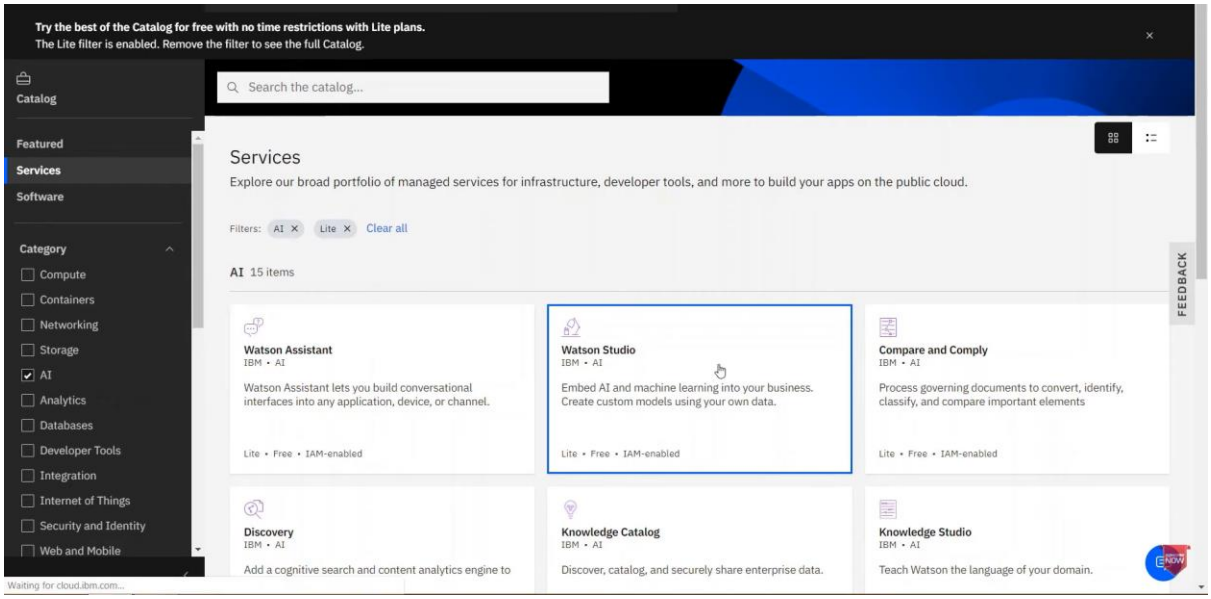
FEEDBACK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Lite • Free • IAM-enabled
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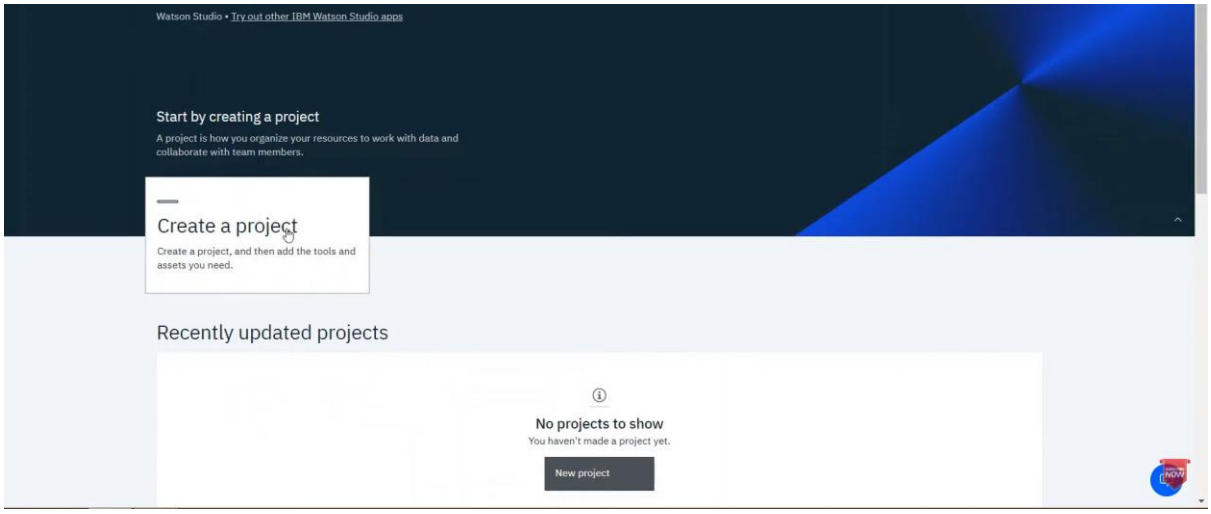
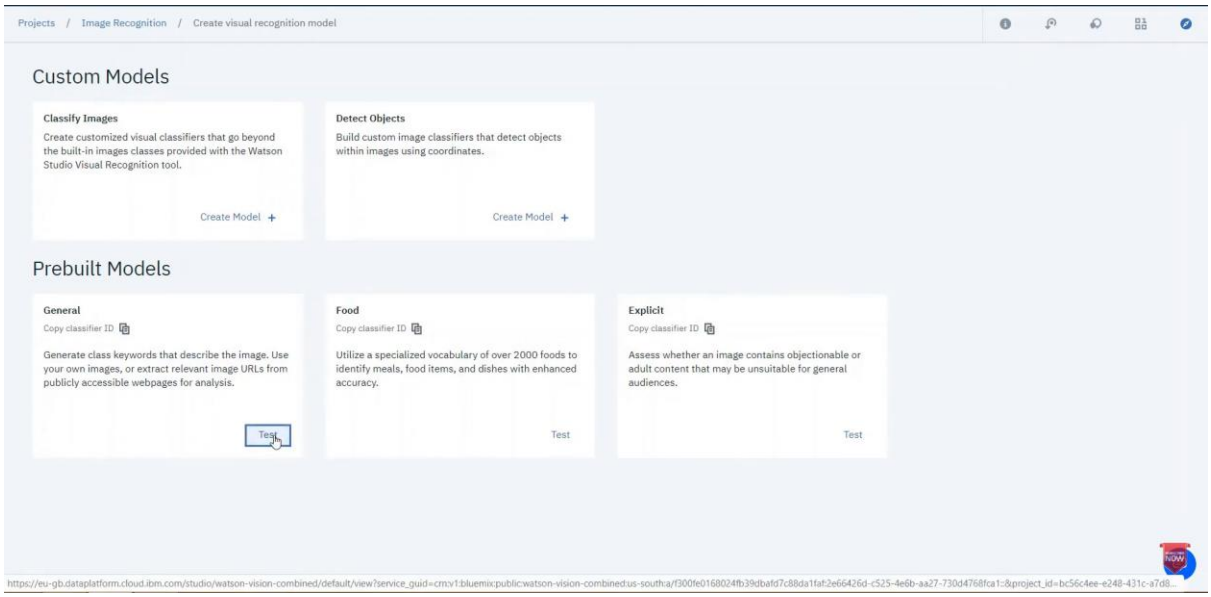
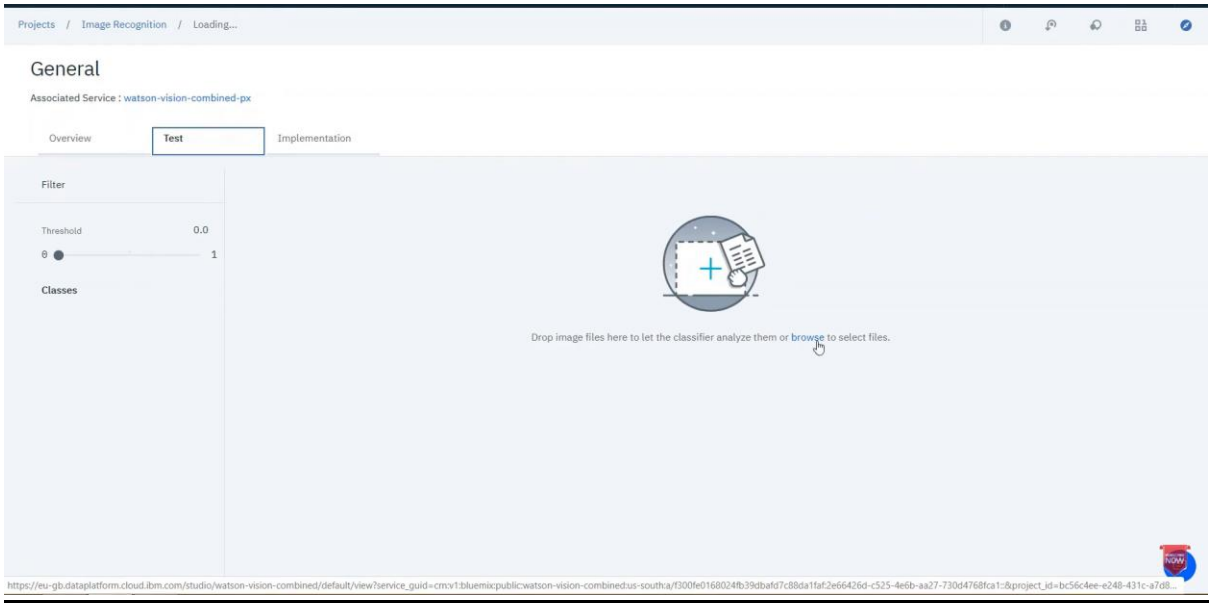
IBM • AI
Process governing documents to convert, identify, classify, and compare important elements
Lite • Free • IAM-enabled
Discovery
IBM • AI
Add a cognitive search and content analytics engine to
Knowledge Catalog
IBM • AI
Discover, catalog, and securely share enterprise data.
Knowledge Studio
IBM • AI
Teach Watson the language of your domain.
FEEDBACK


Watson Studio • Try out other IBM Watson Studio apps
Start by creating a project
A project is how you organize your resources to work with data and collaborate with team members.
Create a project
Create a project, and then add the tools and assets you need.
Recently updated projects
No projects to show
You haven't made a project yet.
New project


Projects / Image Recognition / Create visual recognition model
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


Projects / Image Recognition / Loading...
General
Associated Service : watson-vision-combined-px
Overview
Test
Implementation
Filter
Threshold
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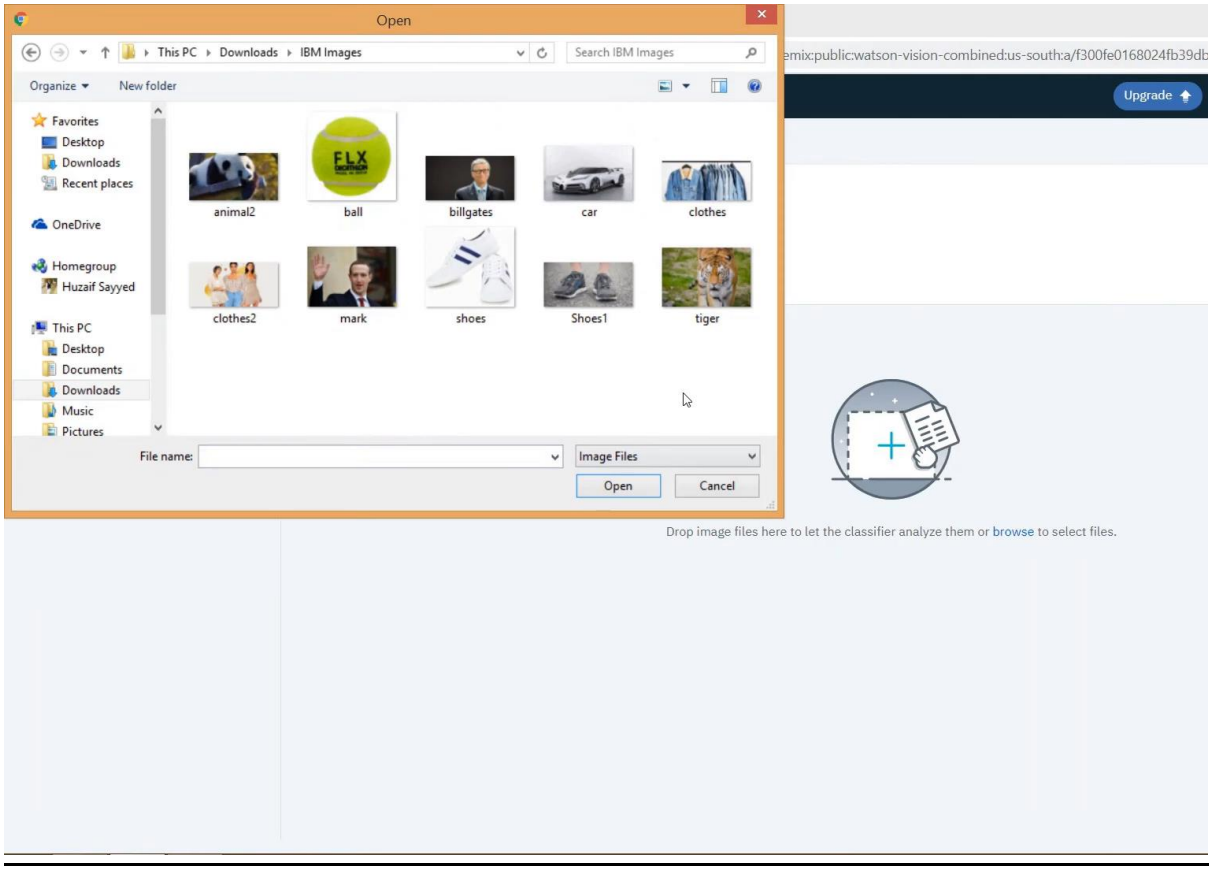
1
Classes
Drop image files here to let the classifier analyze them or browse to select files.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Search IBM Images
Organize
New folder
Favorites
Desktop
Downloads
Recent places
OneDrive
Homegroup
Huzaif Sayyed
This PC
Desktop
Documents
Downloads
Music
Pictures
animal2
ball
billgates
car
clothes
clothes2
mark
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Shoes1
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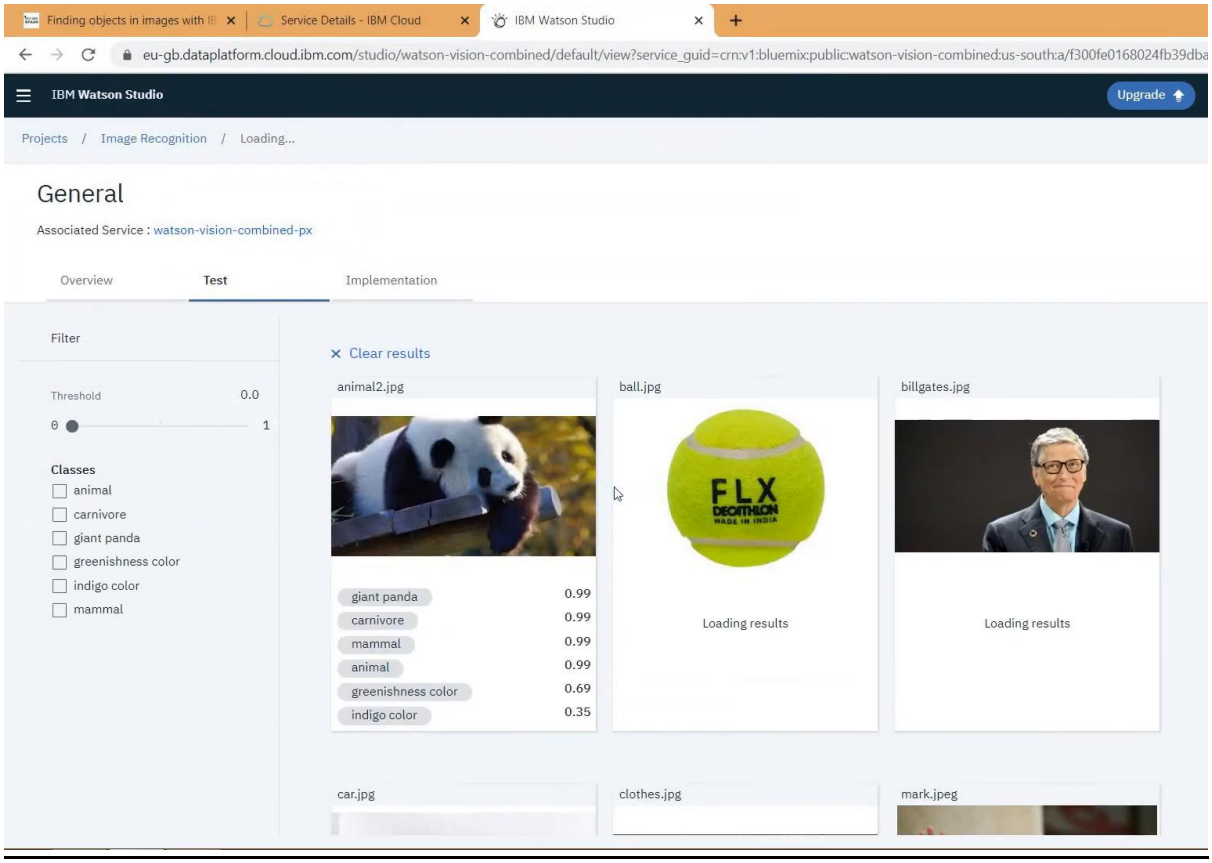
File name:
Image Files
Open
Cancel
Upgrade
Drop image files here to let the classifier analyze them or browse to select files.


Finding objects in images with IB
Service Details - IBM Cloud
IBM Watson Studio
eu-gb.dataplatform.cloud.ibm.com/studio/watson-vision-combined/default/view?service_guid=crn:v1:bluemix:public:watson-vision-combined:us-south:a/f300fe0168024fb39dba
IBM Watson Studio
Upgrade
Projects / Image Recognition / Loading...
General
Associated Service : watson-vision-combined-px
Overview
Test
Implementation
Filter
Threshold
0.0
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Classes
animal
carnivore
giant panda
greenishness color
indigo color
mammal
Clear results
animal2.jpg
giant panda 0.99
carnivore 0.99
mammal 0.99
animal 0.99
greenishness color 0.69
indigo color 0.35
ball.jpg
Loading results
billgates.jpg
Loading results
car.jpg
clothes.jpg
mark.jpeg