PROJECT DOCUMENTATION & SUBMISSION

PHASE 5

PROJECT – IMAGE RECOGNITION WITH IBM CLOUD VISUAL RECOGNITION

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Image Recognition with IBM Cloud Visual Recognition

Phase 5: Project Documentation & Submission

In this part you will document your project and prepare it for submission.

Document the image recognition project and prepare it for submission.

Documentation

Outline the project's objective, design thinking process, and development phases.

Describe the user interface, technical implementation details, and integration of IBM Cloud Visual Recognition.

Explain how AI-generated captions enhance user engagement and storytelling.

Submission

Share the GitHub repository link containing the project's code and files.

Provide instructions on how to deploy the image recognition system using IBM Cloud and the web interface.

Write a detailed README file explaining how to navigate the website, update content, and any dependencies.

Objective:

The objective of this project is to develop an image recognition system using IBM Cloud Visual Recognition service. The system aims to accurately identify objects and scenes within images, providing a seamless user experience. The project focuses on enhancing user engagement and storytelling by incorporating AI-generated captions for the recognized images.

Design Thinking Process:

1. Empathize: Understand the user's need for efficient image recognition and engaging content.

2. Define: Define the project scope, goals, and the integration of IBM Cloud Visual Recognition for image analysis.

3. Ideate: Brainstorm ideas for the user interface, AI-generated captions, and user engagement features.

4. Prototype: Develop a prototype of the application, integrating the IBM Cloud Visual Recognition API for testing and validation.

5. Test: Test the system's accuracy, user interface usability, and the impact of AI-generated captions on user engagement.

6. Implement: Implement the final version of the application, ensuring seamless integration of all components.

7. Iterate: Gather user feedback, make necessary improvements, and iterate on the design and functionality.

Development Phases:

Phase 1: Problem Definition and Design Thinking

In this initial phase, we'll outline our understanding of the problem statement and the design thinking approach we will adopt to solve it.

Phase 2: Innovation:

 Transform the initial problem definition and design thinking into an innovative image recognition system that leverages IBM Cloud Visual Recognition and incorporates sentiment analysis to enhance the generated captions.

Phase 3: Development Part 1

 In this part begin building the project with image recognition system using IBM Cloud Visual Recognition. Create an IBM Cloud account, set up the Visual Recognition service, and obtain API keys. Design a simple web interface where users can upload images and view the AI-generated captions.

Phase 4: Development Part 2

In this part continue building the project.

• Continue building the image recognition system by integrating IBM Cloud Visual Recognition and AI-generated captions.

• Implement the image classification process using the IBM Cloud Visual Recognition API.

• Use natural language generation to create captions for the recognized images.

Phase 5: Project Documentation & Submission

In this part you will document your project and prepare it for submission.

Document the image recognition project and prepare it for submission.

User Interface:

The user interface consists of:

- An upload button to input images for recognition.

- A display area to showcase recognized objects/scenes.

- Captions generated by AI to describe recognized images.

- Social media sharing buttons.

- User engagement features like comments and likes.

Technical Implementation Details:

- Frontend: HTML, CSS, JavaScript for user interface design and interaction.

- Backend: Node.js for server-side logic and communication with IBM Cloud Visual Recognition API.

- Database: Optional, for storing user-generated content (comments, likes).

- IBM Cloud Visual Recognition API: Used for image recognition, providing tags and labels for recognized objects and scenes.

Integration of IBM Cloud Visual Recognition:

The system communicates with IBM Cloud Visual Recognition API through API calls, sending image data and receiving JSON responses containing recognized objects and scenes. The API integration is handled securely using API keys and authentication mechanisms.

AI-Generated Captions and User Engagement:

AI-generated captions are created using natural language processing algorithms that analyze recognized objects and scenes. These captions enhance user engagement and storytelling by providing descriptive and engaging content related to the recognized images. Users can share these captivating captions on social media, comment on them, and express their preferences through likes, creating a dynamic and interactive user experience.

INSTRUCTIONS TO DEPLOY IMAGE RECOGNITION USING IBM CLOUD VISUAL RECOGNITION
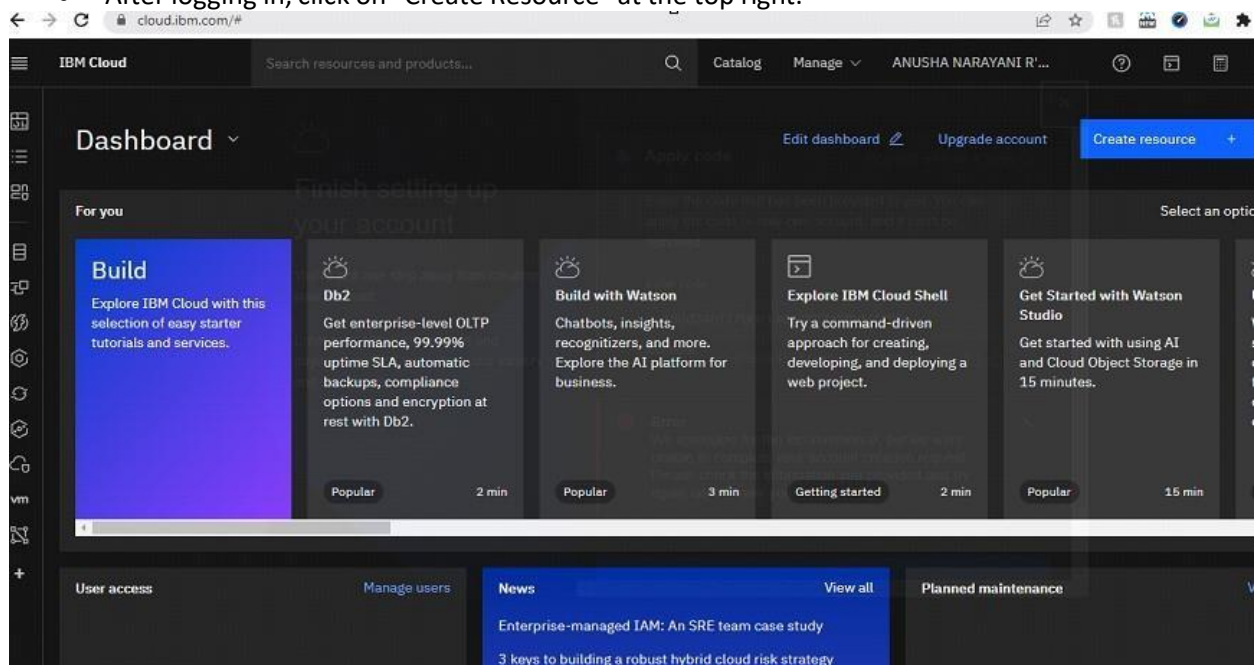
Step 1: Sign Up/Login to IBM Cloud

- Go to the [IBM Cloud website](https://cloud.ibm.com/).
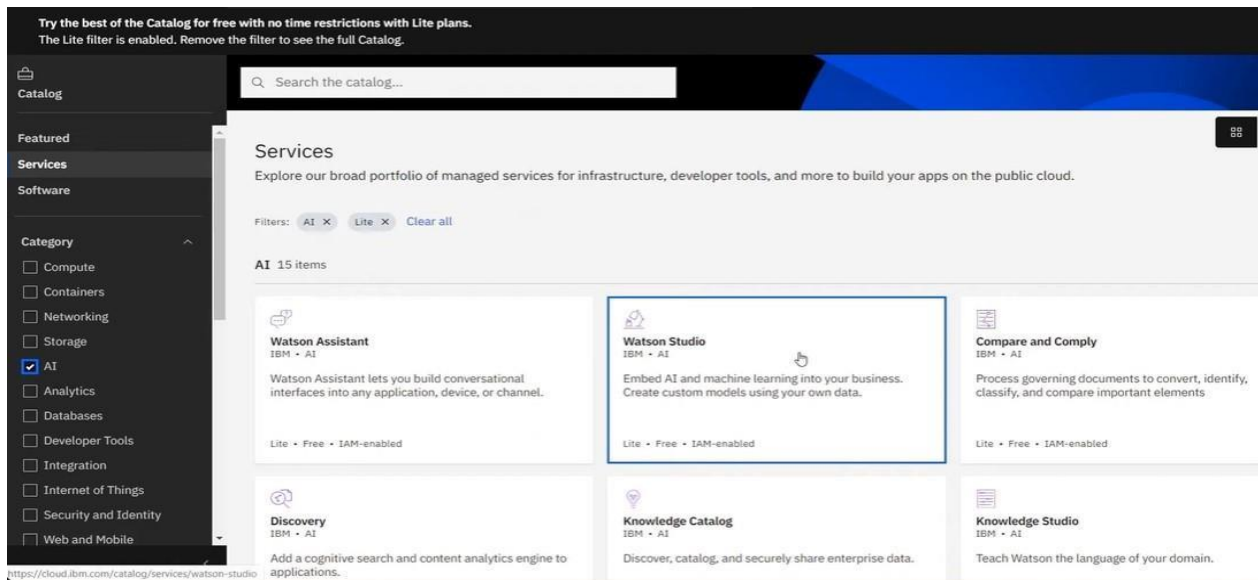- Sign up for a new account or log in if you already have one.
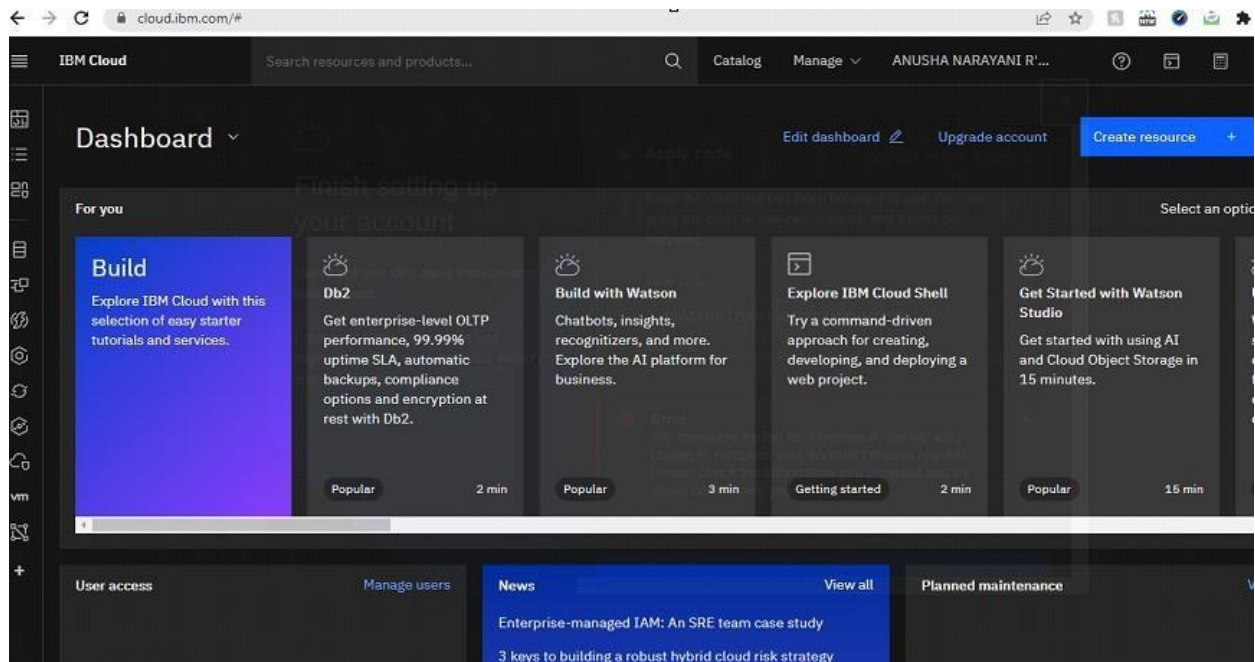
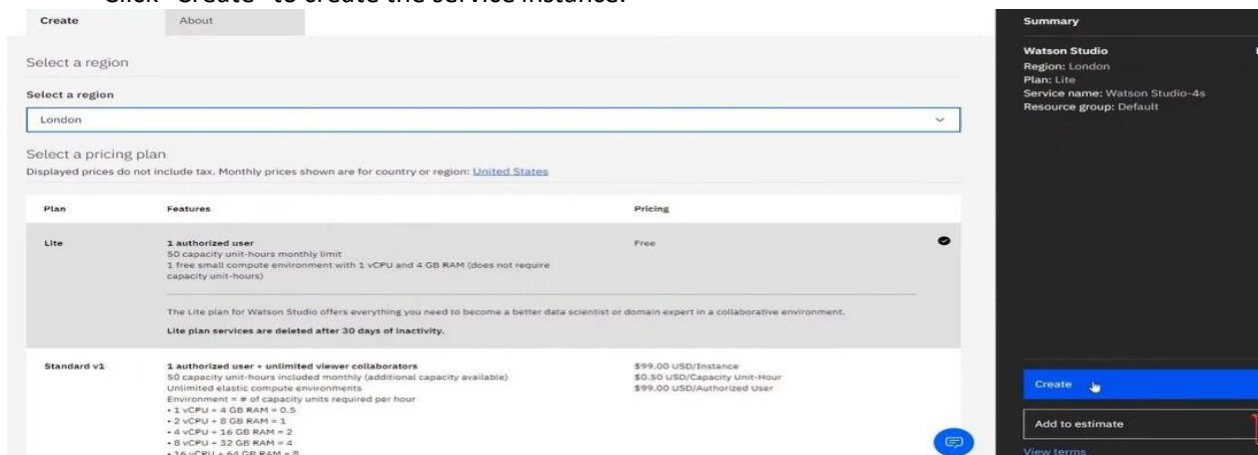**Step 2: Create a Visual Recognition Service**

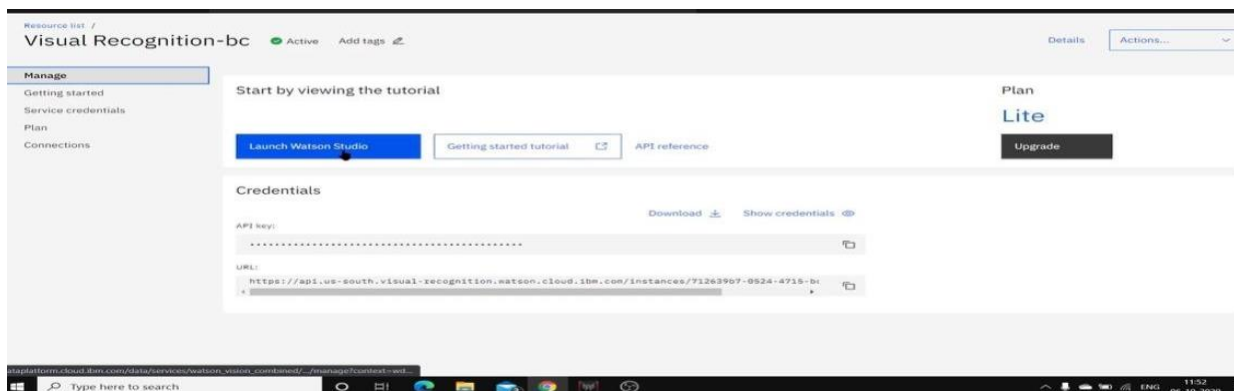- After logging in, click on "Create Resource" at the top right.

- Search for "Visual Recognition" in the catalog.
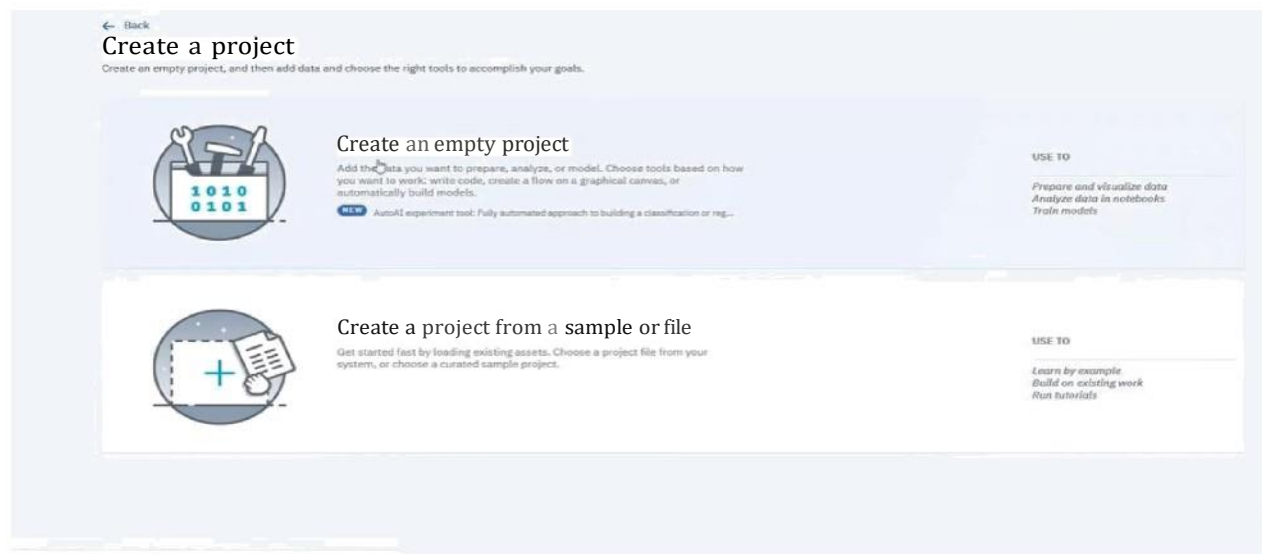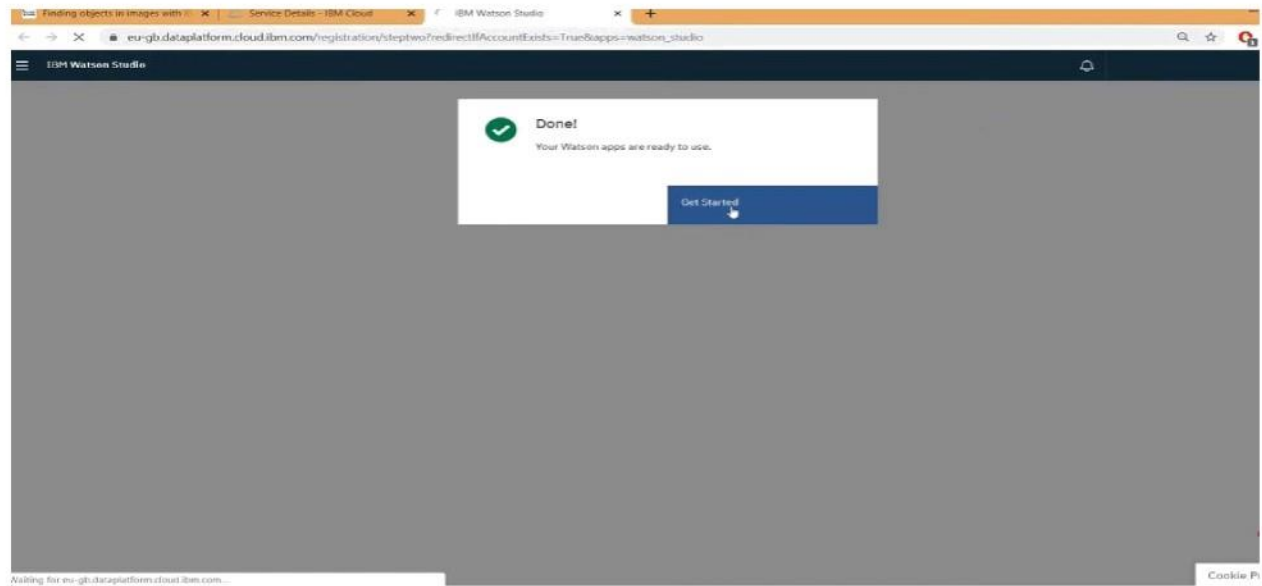- Select the Visual Recognition service.

- Choose the pricing plan that suits your needs.
- Click "Create" to create the service instance.

- Follow the setup instructions provided in the service dashboard to obtain your API keys and credentials.

≡ IBM Watson Studio

Done!

Your Watson apps are ready to use.

Get Started

Waiting for es-gb.dataplatform.cloud.ibm.com...

Cookie P

← Back

Create a project

Create an empty project, and then add data and choose the right tools to accomplish your goals.

Create an empty project

Add the data you want to prepare, analyze, or model. Choose tools based on how you want to work: write code, create a flow on a graphical canvas, or automatically build models.

NEW AutoAI experiment tool: Fully automated approach to building a classification or reg...

USE TO

Prepare and visualize data
Analyze data in notebooks
Train models

Create a project from a sample or file

Get started fast by loading existing assets. Choose a project file from your system, or choose a curated sample project.

USE TO

Learn by example
Build on existing work
Run tutorials

reduce costs even further with our lowest priced Archive storage.

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.

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
◉ 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
	The Lite service plan for Cloud Object Storage includes Regional and Cross Regional resiliency, flexible data classes, and built in security.	
○ Standard	**There is no minimum fee, so you pay only for what you use.**	Expand each section to view details

Cancel   **Create**

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reduce costs even further with our lowest priced Archive storage.

Confirm Creation   ✕

Plan

| Lite   ▼ |

Resource group

| Default   ▼ |

Service name

| cloud-object-storage-rz |

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

PLAN	FEATURES	
◉ 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 s	
	The Lite service plan for Cloud Object Storage includes Regional and Cross Reg	
○ Standard	**There is no minimum fee, so you pa**	details

Cancel   Create

New project

Define project details   **Storage**

Name   cloud-object-storage-rz

| Project name |

Description

| Project description |

Choose project options

☐ Restrict who can be a collaborator ⓘ

Project includes integration with Cloud Object Storage for storing project assets.

Step 3: Gather and Organize Your Images

- Collect a set of images for each class/category you want to recognize.
- Ensure that the images are clear, relevant, and well-labeled.
- Organize these images into folders, each folder representing a specific category.

Step 4: Train

- Access your Visual Recognition service instance from the IBM Cloud dashboard.
- Click on "Launch Tool" to open the Visual Recognition tool.
- In the tool, click on "Create a Project."
- Add a name for your project and click "Create."
- Inside your project, click on "Add a Collection."
- Upload images from your folders to the respective collections/categories.
- Once images are uploaded, click on "Train" to train your custom classifier.

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

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

PLAN	FEATURES	PRICING
⊙ Lite	**1,000 Events per month towards:** Pre-trained model classification (General, Food, Explicit) (images) Custom Model classification (images) Custom Model training (images) 2 Custom Models 1 Lite Plan instance per IBM Cloud Organization Free Exports to Core ML	Free
	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.	
○ 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	-

Cancel   Create

Step 5: Test

- After training is completed, you can test your classifier by uploading new images.

rojects / Image Recognition / Loading...

General

Associated Service : watson-vision-combined-px

| Overview | Test | Implementation |

Filter

Threshold   0.0

0 ●————————— 1

Classes

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

New-Collection •

@ Ready.. ..•

Upload directly

To add files io your proje
and model. drop Jpeg.,pr
a .zp lias he   or

Q   Search image files

Browse

Filter

Add from existing projec

✔ Show all

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toyourmooe.

@   nerrot (/

@ No objeccs {0}

0 selected

images (3).jpg   (i)

images (4).jpg
12 Aug 2020, 6:09:41 pm
11.9 KB

Items per page: 50 ∨   1–1 of 1 items   1 ∨   of 1 pages   ◁   ▷

raw a square around an object

Done   ^

Iew   Pan   Zoom

Add New Object
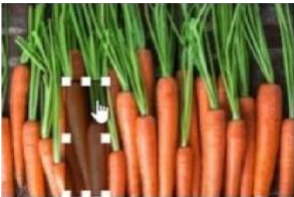
Height		Widt h
104	^	3e
74	Q	6e

cancel

New-Collection •

e Ra«dy« ...

Upload directly

*o add files to your pro ect
an.I model. *a op* ,tpeg, .png,

Q   Search image files

Browse

Add 1rom existing project I

project to the training aea   to add tr
to your model.

Filter

0 selected

☐ images (3).jpg
☐ I?how all!
✓ 'carrot·(1)
☐ No objects (0)

images (3).jpg

images (3).jpg
12 Aug 2020, 6:09:41 pm
17.63 KB

carrot(1)

New-Collection

Associated Service - watson- vision-combined-zc

Overview   Teat   Implementation

Filter

e0   1

Open

This PC › Desktop › vegetables   Search vegetables

Organize ▾   New folder

- This PC
- 3D Objects
- Desktop
- Documents
- Downloads
- Music
- Pictures
- Videos
- Local Disk (C:)
- Local Disk (D:)
- Local Disk (E:)
- Network

download (1).jpg   download.jpg   images (1).jpg   images (2).jpg

images (3).jpg   images (4).jpg   images (5).jpg   images (6).jpg

File name: images (3).jpg   Image files (*.tiff;*.pjp;*.jfif;*.gif ⌄

Open   Cancel

da53a687-fdf9-4d81-9b92-b57186...

Upgrade ⇧   🔔

Objects

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

Projects / Object Detection / New-Collection

New-Collection

Associated Service : watson-vision-combined-zc

Edit and Retrain

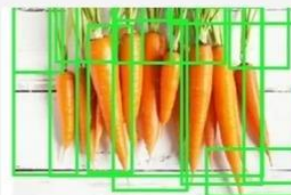Overview   **Test**   Implementation
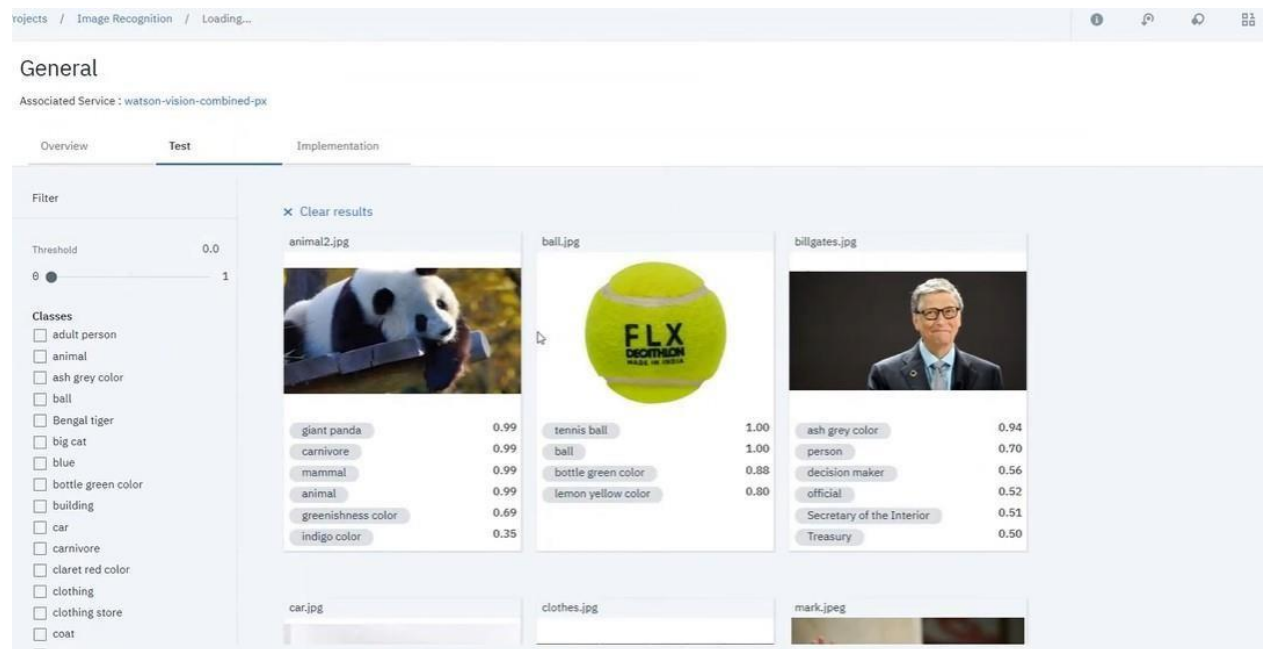
Filter

Threshold   0.0

0 ●————   1

Objects
☐ carrot

carrot	0.27
carrot	0.26
carrot	0.24
carrot	0.22

carrot	0.31
carrot	0.25
carrot	0.23
carrot	0.22

OTHER RECOGNISED IMAGES:

CONCLUSION:

This project successfully integrates IBM Cloud Visual Recognition, creating an image recognition system with an engaging user interface and AI-generated captions. The combination of accurate recognition and captivating storytelling enhances user engagement, offering a seamless and enjoyable experience for users interacting with the application.

REPOSITORY LINKS:

- **https://github.com/sivasankari2306/ProjectDemo.git**