IMAGE RECOGNITION WITH IBM CLOUD VISUAL RECOGNITION

Phase 1: Problem Statement:

Image Recognition with IBM Cloud Visual Recognition

Problem Definition:

One of the tools available in the market right now for doing Image Classification & Object Detection is IBM cloud Vision.

While many approaches of doing image classifications have been around for 6+ years since 1st Image Net challenge with Alexnet in 2012, digging more into recognizing objects within an image (or video streams) just emerged in recent years.

Design Thinking:

Image recognition with IBM Cloud Visual Recognition typically involves the following steps:

1.<u>Set Up an IBM Cloud Account</u>:

    If you don't already have one, create an IBM Cloud account and log in.

 2.<u>Create an Instance of Visual Recognition Service</u>:

In your IBM Cloud dashboard, create an instance of the Visual Recognition service.

3.<u>Get API Credentials</u>:

Once your service instance is created, you'll receive API credentials (an API key and URL) that you will use to authenticate your requests.

4.<u>Collect and Prepare Images</u>:

Gather the images you want to analyze. Make sure they are in a suitable format (e.g., JPEG, PNG) and meet any size or quality requirements.

5. <u>Train a Custom Model</u>:

 If you need to recognize specific objects or classes, you can train a custom model using your image dataset. This step is optional but can improve recognition accuracy for specific use cases.

6. <u>Use the API</u>:

Depending on your needs, you can use the API for various purposes:

- Classify Images: Submit images to the API for classification. The API will return labels or tags describing the objects or scenes in the image.

- Detect Faces: You can also use the API to detect faces in images, along with attributes like age, gender, and emotion.

- Train and Re-Train Models: If you're using custom models, you may need to periodically re-train them with new data to improve accuracy.

7. <u>Handle API Responses</u>:

Parse the API responses to extract the information you need for your application.

8. <u>Integrate with Your Application</u>:

Incorporate the image recognition capabilities into your application or service using the API credentials and the appropriate API endpoints.

9. <u>Test and Iterate</u>:

Test your integration thoroughly and fine-tune your application as needed to achieve the desired recognition accuracy and performance.

10. <u>Monitor and Maintain</u>:

Regularly monitor the performance of your image recognition system. If you're using a custom model, consider re-training it periodically to adapt to changing data and improve accuracy.

11. <u>Manage Costs</u>:

Be mindful of the pricing structure for IBM Cloud Vision Recognition, as usage can incur costs based on the number of API calls and features used.
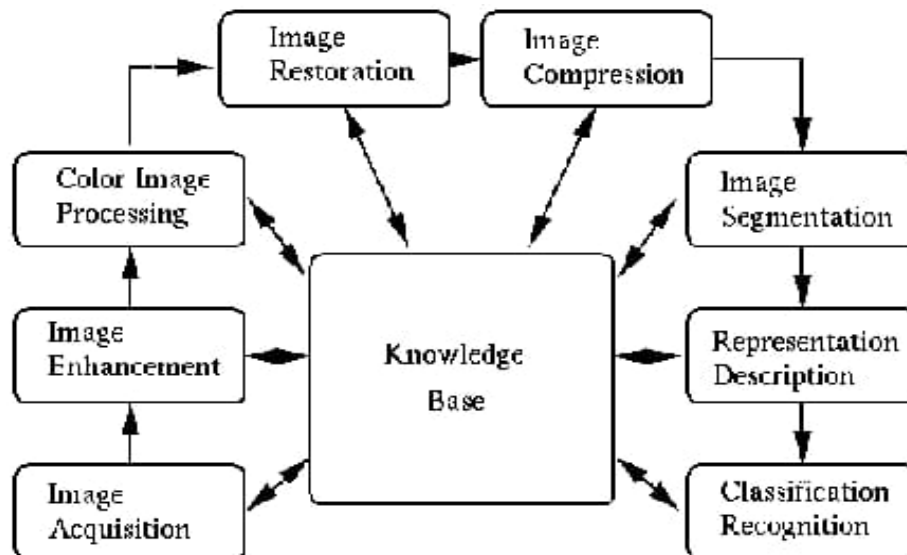
Use Case:

Image recognition is used to perform many machine-based visual tasks, such as labeling the content of images with meta tags, performing image content search and guiding autonomous robots, self-driving cars and accident-avoidance systems.
Example:

Facial recognition. Facial recognition is used in a variety of contexts -- social media,security systems and entertainment -- and frequently involves identifying faces in photos and videos. For example, when someone uploads a photo of their friends on Facebook, the app instantly suggests the friends whom it believes are in that photo. Deep learning algorithms are used in facial recognition to evaluate a photo of a person and produce the accurate identity of the individual in the image. The algorithm can be expanded to extract important attributes such as age, gender and facial expressions of a person through their image. The facial recognition feature on smart phones, as well as computerized picture identity verification at security checkpoints such as airports or building entrances, are most common applications of image recognitio

Flow chart :

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