### **Machine learning integration, photo enhancements, image stitching, and video analysis.**

### **1. Machine Learning Integration**

Using Machine learning algorithms with image/video data to recognize patterns, classify objects, or make predictions automatically. It is used to do predictions and get future references.

**Applications:**

* Facial recognition in security systems.
* Medical image diagnosis (e.g., detecting tumors in X-rays). It comes under CNN.
* Prediction systems.

### **2. Object Detection (objdetect)**

A computer vision technique that identifies and locates objects within an image or video. It can help to get and label multiple labelled objects which are present in the frame (it could be real time analysis or in the form of photos and videos).

**Applications:**

* Detecting vehicles in traffic monitoring.
* Pedestrian detection for self-driving cars.
* Barcode and QR code scanning.

### **3. Photo Enhancements**

Denoising is a very basic concept in Generative AI. Improving image quality through techniques like noise reduction, sharpening, brightness/contrast adjustment, and color correction. This helps to manipulate the pixels of the image and get the resultant image more clearer or even blurry.

**Applications:**

* Restoring old photographs.
* Enhancing satellite images.
* Improving low-light mobile photos.

### **4. Image Stitching**

### Combining multiple overlapping images to create a single wide-angle or panoramic image.

### **Applications**:

* Panorama photos on smartphones.

### **5. Video Analysis** Processing and interpreting video streams to detect events, objects, or patterns over time. We can also analyze the videos to get the information from it and asks some questions moreover which is a future enhancement that could be done in video analysis.

**Applications:**

* CCTV surveillance analytics.
* Sports performance tracking.
* Detecting abnormal behavior in public spaces.