Displaying Live IP Camera Feed Using Python

This presentation explores how to access and display live video streams from IP cameras using Python, with a focus on basic image processing techniques and essential libraries.

by Anand Prajapati

Introduction

1 Objective

Learn how to access and display a live video feed from an IP camera using Python.

2 Technologies

We'll utilize OpenCV for image processing, urllib for fetching the image data, and imutils for resizing the image.

Code Overview

1

Fetch Image

Retrieve a snapshot (JPEG) from the IP camera's URL.

2

Decode Image

Convert the byte stream into an OpenCV-compatible format for processing.

3

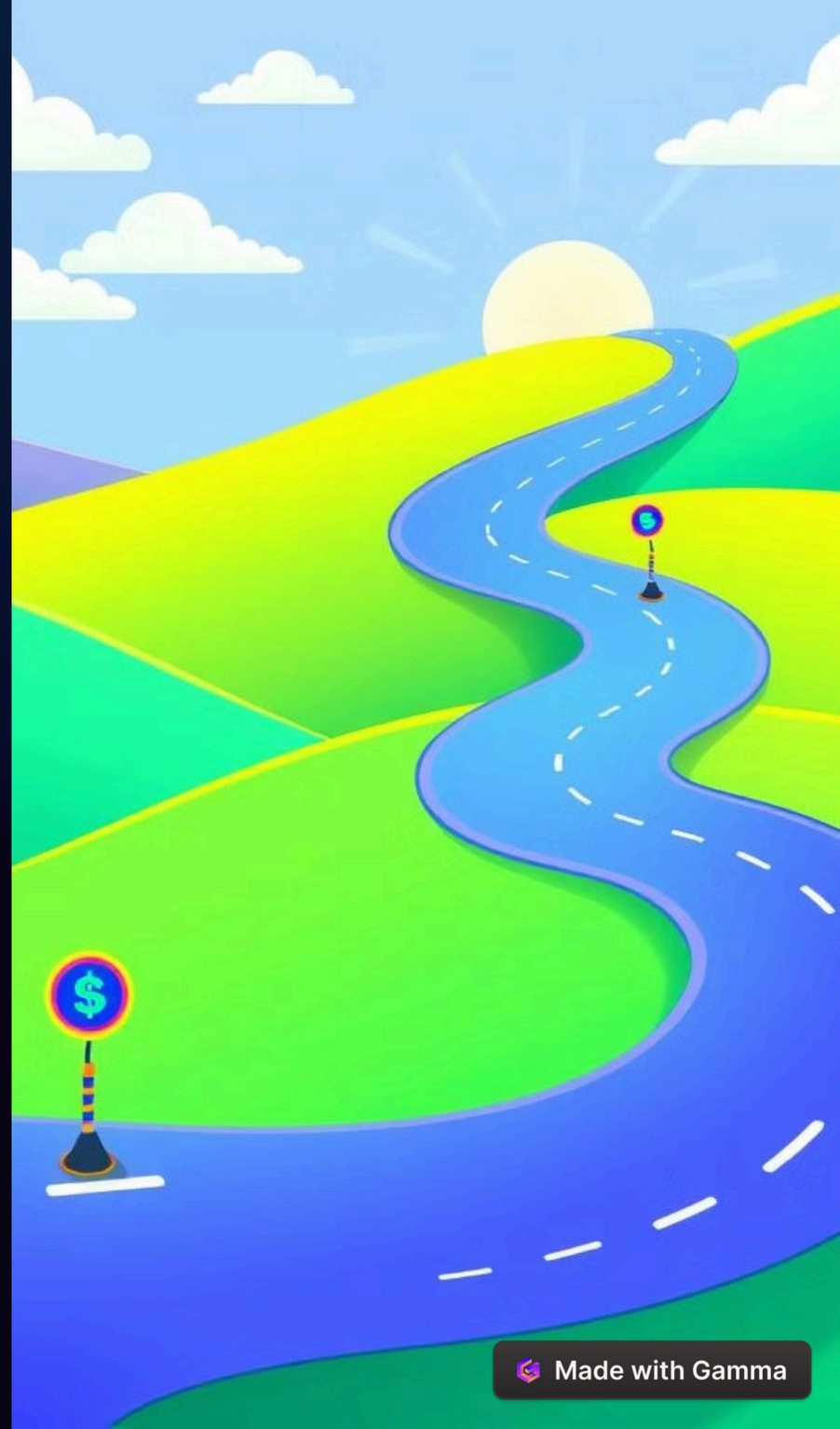
Display Image

Continuously show the image in a window for visualization.

4

Exit Program

Close the feed when the user presses the 'q' key.



Step 1 – Import Libraries

Library	Purpose
urllib.request	Fetches the image from the camera's URL.
cv2	Handles OpenCV functions, such as image decoding and display.
numpy	Manages image data in a numerical format.
imutils	Resizes images for optimal display.

Step 2 – Accessing and Decoding the Image

URL

The IP camera's URL that hosts the image stream (e.g., `http://10.183.188.158:8080/shot.jpg`).

Fetching the Image

Use `urllib.request.urlopen(url)` to retrieve the image data as a byte stream.

Decoding the Image

Employ `cv2.imdecode(imgnp, -1)` to decode the byte stream into an OpenCV-compatible image format.

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Step 3 – Resizing and Displaying the Image

1

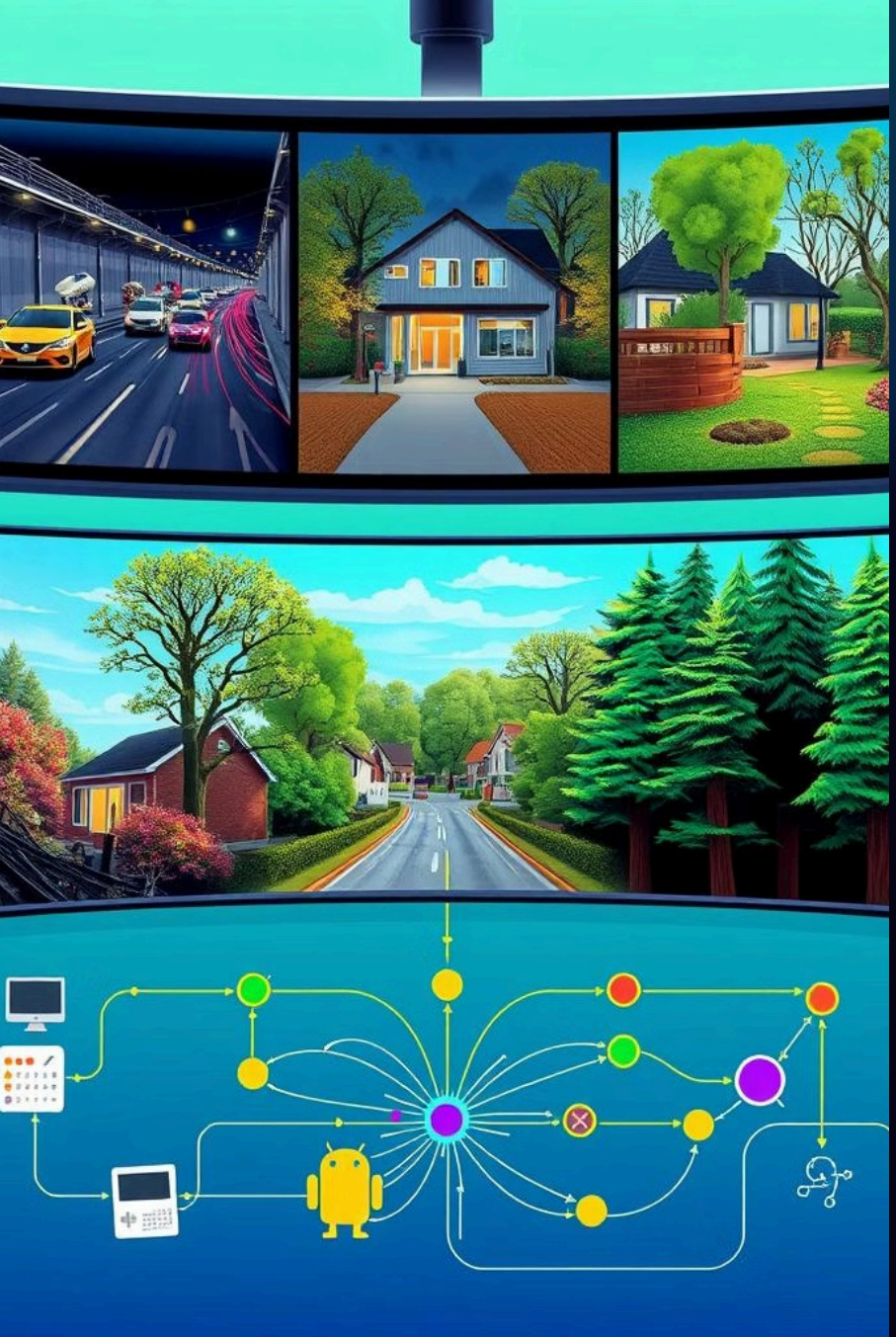
2

Resizing the Image

Use `imutils.resize(img, width=450)` to resize the image to a desired width for better visualization.

Displaying the Image

Employ `cv2.imshow("CameraFeed", img)` to display the image in a window titled "CameraFeed".



Applications & Conclusion

Security Monitoring

Live feeds from IP cameras can be used for real-time security monitoring, allowing you to observe and react to events in a timely manner.

IoT Projects

Integrate live camera streams into your Python-based IoT systems for enhanced functionality, such as remote monitoring and control.