

PROGRAM 6

Program Title

Capture Live Image using USB Camera on Jetson Nano and Send Notification

Aim

To capture a live image using a USB camera on Jetson Nano and send the image as a notification.

Components / Requirements

- Jetson Nano
 - USB Camera
 - Internet connection
 - Pushbullet account
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Pre-Code Setup (Libraries & API)

Library Installation

```
# Install OpenCV (system-wide)
sudo apt update
sudo apt install python3-opencv -y
```

```
# Install Pushbullet library (inside virtual environment or globally)
pip install pushbullet.py
```

Pushbullet API Setup

1. Visit <https://www.pushbullet.com> and log in.
2. Go to **Settings → Access Tokens**.
3. Create a new access token.
4. Copy the API key and paste it into the program code.

The API key is required to authenticate and send notifications.

Algorithm / Logic

1. Initialize the USB camera using OpenCV.
 2. Capture a single image frame from the camera.
 3. Save the captured image to a file.
 4. Upload the image using Pushbullet API.
 5. Send the image as a notification.
 6. Release camera resources.
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Libraries Used

- `cv2`
 - `time`
 - `pushbullet`
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Program Code

```
import cv2
from pushbullet import Pushbullet
import time

# ===== CONFIG =====
PUSHBULLET_API_KEY = "PASTE_NEW_API_KEY_HERE"
IMAGE_PATH = "/home/aiml/Pictures/test.jpg"
# =====

def capture():
    """Captures a single image from USB camera and saves it"""

    print("Opening camera...")
    cam = cv2.VideoCapture(0)    # USB camera (index 0)

    if not cam.isOpened():
        print("X Camera not accessible")
        return False

    time.sleep(2)    # Camera warm-up

    ret, frame = cam.read()

    if not ret:
        print("X Failed to capture image")
```

```

        cam.release()
        return False

    cv2.imwrite(IMAGE_PATH, frame)
    cam.release()

    print("✅ Image captured successfully")
    return True


def send():
    """Sends the captured image using Pushbullet"""

    print("Sending image via Pushbullet...")
    pb = Pushbullet(PUSHBULLET_API_KEY)

    with open(IMAGE_PATH, "rb") as pic:
        file_data = pb.upload_file(pic, "captured_image.jpg")
        pb.push_file(**file_data)

    print("✅ Image sent successfully")

# ====== MAIN ======
if __name__ == "__main__":
    if capture():
        send()
    else:
        print("❌ Image capture failed. Notification not sent.")

```

Output / Result

- The USB camera captures a live image.
- The image is saved locally on the system.
- The captured image is sent as a Pushbullet notification.

Possible Viva / Exam Questions

1. Why is OpenCV used in this program?
2. What is Pushbullet?
3. What is the output of the program?
4. What happens if the camera is not detected?

Conclusion

The program successfully demonstrates capturing a live image using Jetson Nano and sending the captured image as a notification using Pushbullet.