# Assignment 5 - Gif

Name : Anuska Nath
Roll : 002311001003
Dept : IT, Section : A1
Year : UG 3

Create an animation of GIF image using Python. Collect multiple images from a video(any topic from your syllabus) as input and use them for gif animation.
Edit the image and write some text on it, for example, regarding the matter or your name. Use the edited image for final outcome.

# Report: GIF Animation Creation Using Python

## 1. Objective

- To create an animated **GIF image** using Python.
- To extract **multiple frames from a video** related to a syllabus topic.
- To **edit each frame** by adding text such as:
    - Topic name
    - Creator's name
- To combine the edited frames into a **final GIF animation**.

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## 2. Tools and Libraries Used

- **Python**
- **OpenCV (cv2)** → For reading video and editing frames.
- **ImageIO** → For creating GIF animation.
- **Pillow** → Image handling support.
- **Google Colab** → For uploading video and executing code.

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# 3. Input Details

- **Input Video:** `kruskals.mp4`
- **Extracted Frame Interval:** Every **15th frame**.
- **Added Text on Frame:**
    - Topic: *Bubble Sort*
    - Creator Name: *Anuska Nath*
- **Output GIF Name:** `final_animation.gif`

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# 4. Working Procedure

### Step 1: Install Required Libraries

- Installed:
    - `opencv-python`
    - `imageio`
    - `pillow`

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### Step 2: Upload Video File

- Video file uploaded using:

from google.colab import files
uploaded = files.upload()

```
from google.colab import files
uploaded = files.upload()
```

```
Choose files kruskals.mp4
kruskals.mp4(video/mp4) - 6713847 bytes, last modified: 18/02/2026 - 100% done
Saving kruskals.mp4 to kruskals.mp4
```

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### Step 3: Frame Extraction from Video

- Video opened using **OpenCV VideoCapture**.
- Frames read one by one.
- Every **15th frame** selected and saved.

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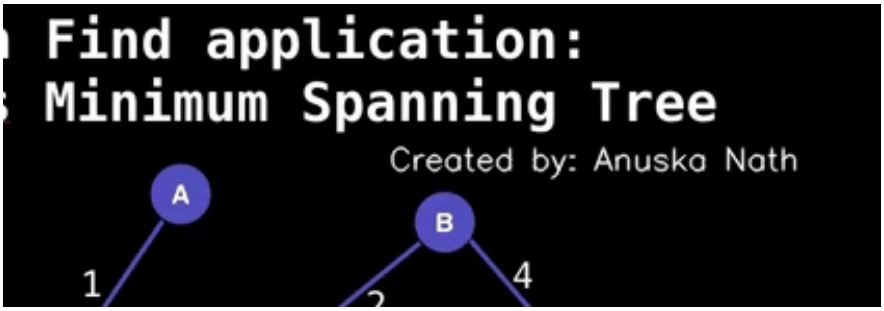
### Step 4: Image Editing

- Added **text overlay** on each selected frame:
    - Creator name displayed at the top.
- Used: cv2.putText()

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### Step 5: GIF Creation

- All edited frames stored in a list.
- GIF created using:

  imageio.mimsave()

- Frame duration set to **0.5 seconds**.

```
Requirement already satisfied: opencv-python in /usr/local/lib/python3.12/dist-packages (4.13.0.92)
Requirement already satisfied: imageio in /usr/local/lib/python3.12/dist-packages (2.37.2)
Requirement already satisfied: numpy>=2 in /usr/local/lib/python3.12/dist-packages (from opencv-python) (2.0.2)
Requirement already satisfied: pillow>=8.3.2 in /usr/local/lib/python3.12/dist-packages (from imageio) (11.3.0)
Extracting and editing frames...
/tmp/ipython-input-4126010765.py:52: DeprecationWarning: Starting with ImageIO v3 the behavior of this functior
  frames.append(imageio.imread(frame_path))
Creating GIF...
GIF created successfully!
```

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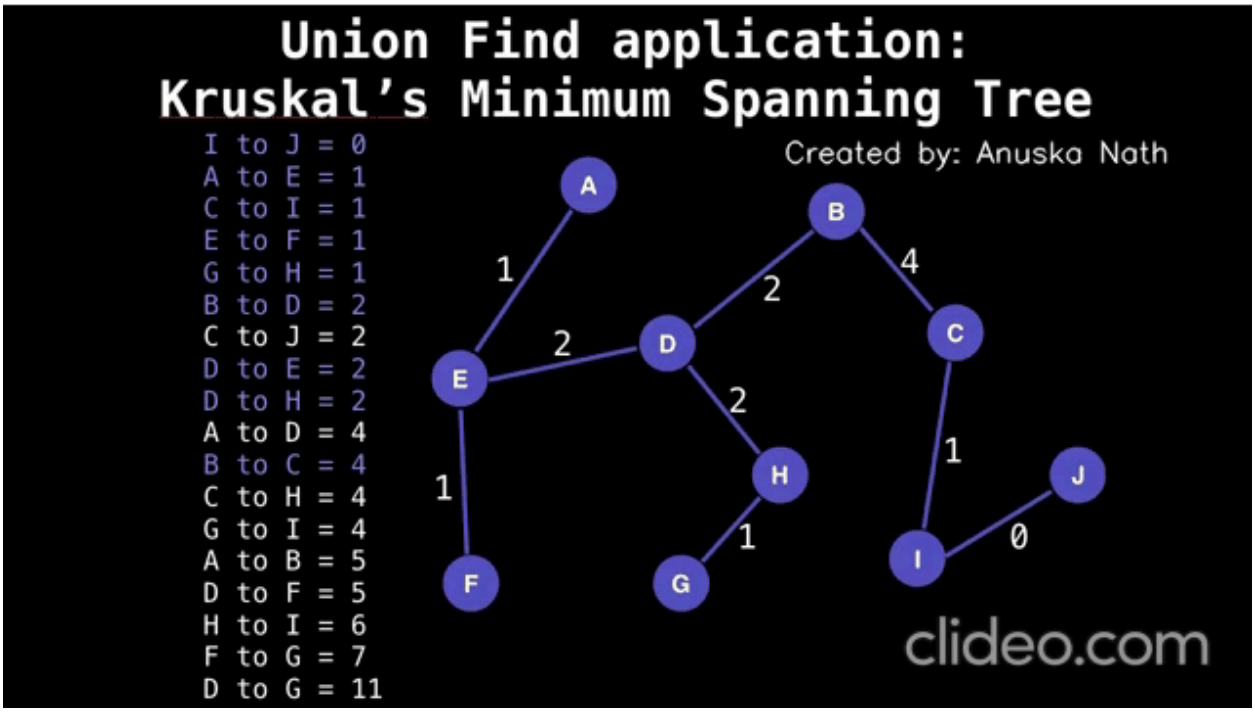
### Step 6: Display Final Output

- GIF displayed using:

  ```
  from IPython.display import Image, display
  display(Image(filename="final_animation.gif"))
  ```

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## 5. Output

- Successfully generated an **animated GIF** from the video.
- Each frame contains:
  - Extracted visual from topic video.
  - Creator's name overlay.
- Output file: **`final_animation.gif`**

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# 6. Conclusion

- Learned how to:
    - Extract frames from a video using **OpenCV**.
    - Edit images by adding **text overlays**.
    - Create **GIF animation** using **ImageIO**.
- This method can be applied to:
    - Educational animations
    - Presentations
    - Demonstrations of algorithms or concepts.