



Centurion
UNIVERSITY
*Shaping Lives...
Empowering Communities...*

School: Campus:

Academic Year: Subject Name: Subject Code:

Semester: Program: Branch: Specialization:

Date:

Applied and Action Learning

(Learning by Doing and Discovery)

Name of the Experiment :

* Coding Phase: Pseudo Code / Flow Chart / Algorithm



1. Changing Video Format using Python

- a. .mov to .mp4
- b. .mp4 to .mov
- c. .avi to .mp4
- d. .mp4 to .avi
- e. .mp4 to .gif

* Testing Phase: Compilation of Code (error detection)



a. .mov to .mp4

```
import cv2
def convert_mov_to_mp4(input_file, output_file):
    cap = cv2.VideoCapture(input_file)
    if not cap.isOpened():
        print("Error: Could not open the input file")
        return
    width = int(cap.get(cv2.CAP_PROP_FRAME_WIDTH))
    height = int(cap.get(cv2.CAP_PROP_FRAME_HEIGHT))
    fps = int(cap.get(cv2.CAP_PROP_FPS))
    fourcc = cv2.VideoWriter_fourcc(*'mp4v') # Codec for .mp4 format
    out = cv2.VideoWriter(output_file, fourcc, fps, (width, height))
    while cap.isOpened():
        ret, frame = cap.read()
        if not ret:
            break
        out.write(frame)
    cap.release()
    out.release()
    cv2.destroyAllWindows()
    print("Conversion completed successfully.")
if __name__ == "__main__":
    input_file = "C:\\Users\\HP\\Downloads\\file_example_MOV_480_700kB.mov"
    output_file = "C:\\Users\\HP\\OneDrive\\Desktop\\Digital video processing\\mov to mp4.mp4"
    convert_mov_to_mp4(input_file, output_file)
```

	file_example_MOV_480_700kB	03-04-2024 16:37	KMP - Apple Quic...	694 KB
	mov to mp4	03-04-2024 16:57	MP4 File	746 KB

b. .mp4 to .mov



```
import cv2
def video_to_mov(input, output, fps: int = 0, frame_size: tuple = (), fourcc: str = "mp4v"):
    vidcap = cv2.VideoCapture(input)
    if not fps:
        fps = round(vidcap.get(cv2.CAP_PROP_FPS))
    success, arr = vidcap.read()
    if not frame_size:
        height, width, _ = arr.shape
        frame_size = width, height
    writer = cv2.VideoWriter(
        output,
        apiPreference=0,
        fourcc=cv2.VideoWriter_fourcc(*fourcc),
        fps=fps,
        frameSize=frame_size,
    )
    while True:
        if not success:
            break
        writer.write(arr)
        success, arr = vidcap.read()
    writer.release()
    vidcap.release()
    input_file = 'sample-5.mp4' # Replace 'input.mp4' with the path to your input MP4 file
    output_file = "C:\\Users\\HP\\OneDrive\\Desktop\\Digital video processing\\output of mp4 to mov.mov"
    video_to_mov(input_file, output_file)
```

	sample-5	02-02-2024 15:01	MP4 File	1,990 KB
	output of mp4 to mov	03-04-2024 16:04	KMP - Apple Quic...	5,643 KB

* Implementation Phase: Final Output (no error)


c) .avi to .mp4

```
import cv2
def convert_avi_to_mp4(input_file, output_file):
    cap = cv2.VideoCapture(input_file)
    if not cap.isOpened():
        print("Error: Could not open the input file")
        return
    width = int(cap.get(cv2.CAP_PROP_FRAME_WIDTH))
    height = int(cap.get(cv2.CAP_PROP_FRAME_HEIGHT))
    fps = int(cap.get(cv2.CAP_PROP_FPS))
    fourcc = cv2.VideoWriter_fourcc(*'mp4v') # Codec for .mp4 format
    out = cv2.VideoWriter(output_file, fourcc, fps, (width, height))
    while cap.isOpened():
        ret, frame = cap.read()
        if not ret:
            break
        out.write(frame)
    cap.release()
    out.release()
    cv2.destroyAllWindows()
    print("Conversion completed successfully.")
if __name__ == "__main__":
    input_file = "C:\\Users\\HP\\Downloads\\file_example_AVI_480_750kB.avi"
    output_file = "C:\\Users\\HP\\OneDrive\\Desktop\\Digital video processing\\example.mp4"
    convert_avi_to_mp4(input_file, output_file)
```

 file_example_AVI_480_750kB	03-04-2024 16:59	AVI File	726 KB
 example	03-04-2024 16:59	MP4 File	746 KB


d. .mp4 to .avi

```
import cv2
def video_to_avi(input_file, output_file, fps: int = 0, frame_size: tuple = (), fourcc: str = "MJPG"):
    vidcap = cv2.VideoCapture(input_file)
    if not fps:
        fps = round(vidcap.get(cv2.CAP_PROP_FPS))
    success, frame = vidcap.read()
    if not frame_size:
        height, width, _ = frame.shape
        frame_size = (width, height)
    writer = cv2.VideoWriter(output_file, cv2.VideoWriter_fourcc(*fourcc), fps, frame_size)
    while success:
        writer.write(frame)
        success, frame = vidcap.read()
    writer.release()
    vidcap.release()
input_file = 'sample-5.mp4' # Replace 'sample-5.mp4' with the path to your input MP4 file
output_file = "C:\\Users\\HP\\OneDrive\\Desktop\\Digital video processing\\output of mp4 to avi.avi" #
Replace 'output.avi' with the desired output AVI file path
video_to_avi(input_file, output_file)
```

 sample-5	02-02-2024 15:01	MP4 File	1,990 KB
 output of mp4 to avi	03-04-2024 16:03	AVI File	19,047 KB

e. .mp4 to .gif

```
import cv2
import imageio
def video_to_gif(input_file, output_file, fps: int = 10):
    vidcap = cv2.VideoCapture(input_file)
    success, frame = vidcap.read()
    frames = []
    while success:
        frames.append(cv2.cvtColor(frame, cv2.COLOR_BGR2RGB))
        success, frame = vidcap.read()
    vidcap.release()
    imageio.mimsave(output_file, frames, fps=fps)
input_file = 'sample-5.mp4' # Replace 'sample-5.mp4' with the path to your input MP4 file
output_file = "C:\\Users\\HP\\OneDrive\\Desktop\\Digital video processing\\output of mp4 to gif.gif" # Replace 'output.gif' with the desired output GIF file path
video_to_gif(input_file, output_file)
```

 sample-5	02-02-2024 15:01	MP4 File	1,990 KB
 output of mp4 to gif	03-04-2024 16:09	GIF File	78,950 KB

In Python, We can easily change video formats using libraries like MoviePy or OpenCV. To convert from .mov to .mp4, you can use MoviePy library's write_videofile function with the appropriate codec. For .mp4 to .mov conversion, MoviePy can again be used to read the .mp4 file and then write it with the desired extension. Changing from .avi to .mp4 can be achieved using OpenCV's VideoCapture and VideoWriter functions to read and write the video frames, respectively. Similarly, converting from .mp4 to .avi can be done by reversing the process used for .avi to .mp4 conversion. To convert from .mp4 to .gif, MoviePy offers a straightforward solution with its write_gif function.

ASSESSMENT

Rubrics	Full Mark	Marks Obtained	Remarks
Concept	10		
Planning and Execution/ Practical Simulation/ Programming	10		
Result and Interpretation	10		
Record of Applied and Action Learning	10		
Viva	10		
Total	50		

Signature of the Student:

Name :

Regn. No. :

Signature of the Faculty:

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