

Software Assignment

AI5030: Probability and Random Variables
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1 ABOUT THE PROJECT

This project is a simple music player that plays audios randomly without repetition, similar to the Fisher-Yates shuffle algorithm. Our friends in the class sang different songs in various Indian languages. This Python script helps to convert the videos to audios and play them randomly.

2 INTRODUCTION TO UNIFORM DISTRIBUTION

A uniform distribution, also referred to as a rectangular distribution, is a probability distribution where each possible outcome has an equal chance of occurring. It means that every value within a specified range has an equal probability of being observed.

In a continuous uniform distribution, the probability density function (PDF) remains constant within a defined interval and is zero outside that interval. For instance, if we consider a uniform distribution between 0 and 1, any value within that range is equally likely to be chosen.

3 CODE EXPLANATION

In this section, we will explain the Python code that converts video files to audio (MP3), saves them in a folder, and then plays the MP3 files in a uniform distribution.

```
import os
import random
from moviepy.editor import VideoFileClip
from playsound import playsound

# Set the path to the folder containing the videos
video_folder = "/path/to/videos"

# Set the path to the folder to store the audio files
audio_folder = "/path/to/audio"
```

```
# Create the audio folder if it doesn't exist
os.makedirs(audio_folder, exist_ok=True)

# Get a list of all video files in the folder
video_files = [file for file in os.listdir(
    video_folder) if file.endswith(".mp4")]

# Convert the video files to audio and save them
# in the audio folder
audio_files = []
for video_file in video_files:
    # Convert the video to audio
    video_path = os.path.join(video_folder,
                               video_file)
    audio_file = os.path.splitext(video_file)[0] +
        ".mp3"
    audio_path = os.path.join(audio_folder,
                              audio_file)

    video_clip = VideoFileClip(video_path)
    audio_clip = video_clip.audio
    audio_clip.write_audiofile(audio_path)

# Close the audio and video clips
audio_clip.close()
video_clip.close()

# Append the audio file path to the list
audio_files.append(audio_path)

# Shuffle the list of audio files
random.shuffle(audio_files)

# Play the audio files in a uniform distribution
for audio_file in audio_files:
    playsound(audio_file)
# Now all the mp3 audios are played uniformly
```

The code consists of the following steps:

- 1) Set the paths to the folder containing the video files and the folder to store the audio files.
- 2) Create the audio folder if it doesn't exist.
- 3) Get a list of all the video files in the video folder.
- 4) Iterate through each video file and convert it to audio using the 'VideoFileClip' and 'write_audiofile' functions from the 'moviepy.editor' library. The audio files are saved in the audio folder.
- 5) Shuffle the list of audio files using the 'random.shuffle' function from the 'random' module to achieve a random order.
- 6) Play the audio files one by one in a uniform distribution