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| Media Player Development |
| Media Player Using Python and GUIs |
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# Introduction

This Media Player includes additional and unique features such as Video to audio conversion, Audio trimming feature, Extracting vocals form song feature and AI video enhancing feature. The Media Player will be built using Python and GUI apps, with API access and hosting cost. The project aims to provide a user-friendly and efficient media player that can be used for both personal and professional purposes.

This final year project aimed to create a user-friendly media player application using the popular GUI libraries Tkinter or Kivy. The project incorporates unique features such as video to audio conversion, trim audio tracks and save them, extract vocals from a song and finally this application has an AI video enhancer that will enhance the resolution of the video automatically.

## Background

Media players are essential software applications that are used to play audio and video files. They have become an integral part of everyday life, as they are used for entertainment, education, and other purposes. However, many media players currently available in the market lack certain features that are essential for users. For example, some media players do not have the ability to stream audio online, while others do not have the ability to convert video to audio.

## Problem Statement

Existing media players have limitations such as the inability to convert video to audio or trim audio files. Additionally, they do not have Vocal extractor and AI video enhancer in a single App. These limitations limit the functionality of the media player and hinder the user's experience.

## Objectives

The objectives of this project are to:

* Develop a media player that can convert video to audio.
* Develop a media player that can trim audio files.
* Develop a media player that can Extract Vocal from songs.
* Develop a media player that can Enhance the quality of videos automatically using AI concept.
* Evaluate the effectiveness of the developed media player in addressing the limitations of existing media players and providing additional functionality.

# Literature Review

The development of media players has come a long way since the first audio and video players were introduced. Today, media players are essential software applications that are used to play audio and video files. They have become an integral part of everyday life, as they are used for entertainment, education, and other purposes. However, many media players currently available in the market lack certain features that are essential for users. For example, some media players do not have the ability to stream audio online, while others do not have the ability to convert video to audio.

## Comparison of existing Media Players

Existing media players vary in terms of functionality and features. Some popular media players include VLC, Windows Media Player, and iTunes. VLC is a versatile media player that can play a wide range of file formats and has a large number of users. Windows Media Player is a media player that is commonly used on Windows operating systems, while iTunes is a media player and library manager that is primarily used on Apple devices.

## Comparison of existing Tools

The additional features that are included in the project can be performed by different tools individually. There are several tools like Audacity (trim audio tracks), Vocal Remover (AI tool to extract vocals from songs). But the thing is that, they all are individual tools. These features can’t be used in a single application.

## Gaps in existing Media Players

Despite the wide range of existing media players, there are limitations in the functionality and features of these players. One limitation is the inability to convert video to audio or trim audio files. Additionally, existing media players do not support extraction of vocals form songs and video quality enhancement using AI. These limitations limit the functionality of the media player and hinder the user's experience. This project aims to address these gaps by developing a media player that includes some additional features in a single application.

## Unique Features in this Media Player

Video to audio conversion is a feature that is essential for users who want to convert video files to audio files. FFmpeg is a widely used software library that can be used to convert video files to audio files (FFmpeg, n.d.). Pydub is a python library that can be used to manipulate audio files (Pydub, n.d.).

Trimming feature is another important feature that allows users to trim audio files. Audacity is a widely used open-source software that can be used to trim audio files (Audacity, n.d.). The python livrary that will be used to integrate the trimming feature in the application is Pydub Pydub is used to manipulate the audio files in python (Pydub, n.d ).

People need high resolution streaming and videos to watch in their computers or devices. The high resolution and high quality video matters a lot. Cv2 is a Python media library that is used to manipulate the videos. Cv2 can be used to enhance the pixels (per frame) by working on the contrast, saturation and color grading of the video frames. All the manipulation work will be done by AI. (cv2, n.d ).

People may need to extract the vocals from a song. For this purpose they need a third party tool or a software to do so. They need a single application to perform their all requirements. VocalRemover.org is an online tool that provides the provides the services to extract vocals from songs and sace them individually. (vocalremover.org , n.d ). Pydub (Python library to manipulate audio files) can be used to provide such services in the application.

This single Application (Media Player) has all the above features. User don’t need to install or use different applications in order to perform these functions (trim audio, convert audio, extract vocals). Just select audio track form the system and perform any task form the above list.

# Methodology

## Research and Design

This phase will involve designing and developing the Media Player using Python and GUI apps. In this phase the interface and the appearance of the Media Player will be designed. This will be done by using different GUI and designing tools.

## Data Collection

In this phase the research data about the existing projects will be collected through different resources (from books, journals, websites etc). The existing projects will be explored in order to enhance the user experience of this project (Application).

## Tools and Equipment (Editors/IDE’s)

Different tools (editors/IDE’s) that will be used to develop the application are:

* VSCode
* PyCharm
* Sublime Text Editor
* Photoshop

## Technologies (Languages and Libraries)

The programming languages, technologies or libraries that will be used in the project are:

* Python (Lead Technology)
* Kivy (Python GUI)
* Tkinter (Python GUI)
* PyQt (Python GUI)
* Pydub (Python Library)
* Cv2 (Python Library
* FFmpeg (Software Library)

## Development and Implementation

The media player will be developed using Python and GUI library such as tkinter, PyQt, wxPython etc. This will allow for the creation of a user-friendly interface and easy integration of the various features. The development process will involve the use of iterative and incremental development model, testing and debugging as needed.

## Testing

Testing will be an important part of the development process. The media player will be tested for functionality and usability. This will include testing the video to audio conversion feature, the trimming feature, and t\\all the other features. User acceptance testing will also be conducted to ensure the media player meets the needs of the intended users.

# References

References for this project will include sources consulted during the literature review, as well as any other sources used during the research and development process.

## Books

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