

Research Paper on Developing Video Compressor Application

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Abstract - In this project, I work on the development of an application for compressing video where a video can consume less space than the original file. A video will encode the process and transfer it into less space than the original file. The application will consume less space or size, but the video quality will remain the same, it will not affect the video. It will reduce the storage for the user by making the video lessen in size.

To create this application Android Studio is used. Android Studio is made to create Android apps easily for various form factors such as mobile phones, tablets, TVs, and Wear devices. The main objective of creating this app is to make the original file have less space or less in size.

Key Words: Video Compressor, Android studio, Java, Google Firebase, Sili Compressor

1. INTRODUCTION

The video is a quick show or sequential show of Bitmap images in an animated way. It's a rapid show casting that generates the concept of Moving objects in the scene. Digital video is important because it has to spread various applications which begin with a TV show, it has a connection with medical applications for science, sports, advertising, space images, etc. Currently, The TV and entertainment market is full of filler Something like an HD or UHD display device. The arrival of the modern form of a broadcasting app is for YouTube, Netflix, prime video, and more. These aids provide video at the request of the user and therefore receive a high price popular. This concept further expands the commercial potential of the entertainment market. The number of users in this regard is growing very fast every day. Nowadays everyone uses YouTube and Netflix which have more than a billion viewers a month. The era of telephone conversations is over. People all over the world are making long videos Interaction with the latest technological advances. This has given researchers special attention to its community. And to download or have a short video with less size is difficult to compress because the users might think that it will make their storage full or give the less quality if it is compressed.

Today, many applications are being created to compress images, videos, and other files so that users can save

memory and maintain file quality. Video compression is the process of lessening or diminishing the number of bits needed to represent a video without compromising the quality of the video. The purpose of compression is to make the video take up less space than the original file and make it easier to send over the Internet. Since video is made up of a time series of images, video compression can be thought of as image compression using the time component.

Video is compressed using a codec, which is a compression component of video compression software. These are algorithms that compile a file by encoding the data contained in the file. Codecs exclude other data, such as frames of similar images, by grouping them into categories. As a result, it eliminates unnecessary data frames and encodes the rest of the data together, resulting in the loss of data bits and smaller file sizes.

Here, Lossless Compression is used to reduce the file size so that you can restore the original quality if necessary. It converts data from the first character group to a more compact group. Because if we use lossy compression some of the same characters might get erased or delete some bits which will be different from the original video.

Video compression algorithms ("codecs") manipulate video signals to dramatically reduce storage space and bandwidth requirements while maximizing perceived video quality. Understanding how video codecs work is essential for embedded systems, processors, and tool developers for video applications. For example, understanding the processing of video codecs and the demand for memory is central to processor selection and software optimization.

2. LITERATURE REVIEW

Android Studio:

Android Studio is an integrated development environment for Google Android released during the Google I/O 2013 event on May 16, 2013. Android Studio includes all Android tools for designing, testing, debugging, and profiling your application. Android

Studio uses Gradle to manage your projects. It is a build automation tool.

There is a flexible Gradle-based build system. Android Studio has a fast feature-rich emulator for app testing.

Android Studio has an integrated environment that you can develop for all Android devices, it applies changes to the resource code of a running app without restarting the app. Android Studio provides a wide range of testing tools and frameworks. It provides native support for Google Cloud Platform. This simplifies the integration of Google Cloud Messaging and App Engine.

The latest version of android studio is used to create this application of compressing video. The latest version is updated in the year of 2022 which is version 4.2.2.

The reputation of Android Studio and the Android app store is more "open source" and less vendor dependent. Android Studio reflects this approach, along with its tools and methodologies.

Java:

Android applications are developed using the Java language. It is currently the only choice for native apps. Java is a popular programming language developed by Sun Microsystems (now owned by Oracle). Developed much later than C and C++, Java incorporates many of the powerful features of those powerful languages while eliminating some of these shortcomings. However, programming languages are only as powerful as their libraries. These libraries exist to help developers build their applications. If you come from traditional programming such as C, C++, Java is easy to learn. There is no one-size-fits-all language, and even Java faces complex issues that can create problems for developers.

Android relies heavily on these Java foundations. The Android SDK includes many standard Java libraries which has data structure libraries, math libraries, graphics libraries, network libraries, and everything else you need as well as Android-specific libraries to help you develop great Android apps.

Google Firebase:

Firebase is a mobile platform that helps you quickly develop great apps, grow your user base and make more

money. Firebase consists of additional features based on Google Analytics for Firebase that can be combined according to your needs. Firebase is made up of additional features that can be combined to suit your needs, based on Google Analytics for Firebase.

Google Firebase is a backup application of google development software that allows developers to develop iOS, Android, and web applications. Firebase provides tools for analyzing tracking, reporting, and fixing app crashes, marketing, and product experiments.

Firebase manages all the data in your database in real time. Therefore, exchanging data from the database and vice versa is easy and fast. Therefore, if you want to develop mobile apps such as livestreaming and chat messaging, you can use Firebase.

With Firebase, you can sync real-time data across all your devices, including Android, iOS, and the web, without having to refresh your screen.

Firebase offers integration with Google Ads, AdMob, DoubleClick, Play Store, Data Studio, BigQuery, and Slack.

Firebase includes databases, analytics, flight reports, and more. Therefore, application usage can be associated with improved user experience.

3. METHODOLOGY:

1. Dependencies:

In Android Studio, dependencies allow your Android project to include external libraries or local jars or other library modules. When you add a dependency to your Gradle file, the added library will be downloaded and added to your project for use in your project. This makes it easier to manage external libraries in your project.

If you are using an external library or module in your Android project, you will need to add a dependency to allow you to use certain libraries that are not available in your project.

The dependencies used in this application are Sili compressor and ISO parser. Sili compressor is a flexible and it is found easy to compress video in compression library of android studio. Sili Compressor is a Java library commonly used in artificial intelligence and computer vision applications. Sili Compressor is free of bugs and vulnerabilities, assembly files are available, permissive

licenses, and moderate support. The high resolution of smartphone cameras and cameras of other devices increases the size of video files, making it difficult to share them with others, even if they need to be uploaded to social applications, social networks, and servers. With Sili Compressor, you can now compress video files while maintaining their quality.

The ISO parser API can read and write MP4 file structures. It's a low-level tool that works with so-called boxes, but it also works with structures like trucks and movies.

Added implementation-
implementation

```
'com.icetec.silicompressor:silicompressor:2.2.4'
```

implementation

```
'com.googlecode.mp4parser:isoparser:1.1.22'
```

2. Permissions:

App permissions help maintain user privacy by protecting access to:

- Limited data such as system status and use contact information.
- Forbidden activities such as connecting to a paired device or recording audio.

If your program provides features that may require access to restricted data or restricted actions. You can perform many uses in your application, such as taking a photo, pausing media playback, and displaying related ads. You do not have to declare permissions.

If you determine that your program should have access to restricted data or perform restricted actions to comply with your use case, declare the appropriate permissions. Some permissions, called installation permissions, are granted automatically when you install the application. Other permissions, called runtime permissions, require your application to go one step further and request permissions during runtime.

Storage permissions are dangerous permissions to access shared external storage. Full read/write access to the volume location is protected by two permissions marked as dangerous:

```
READ_EXTERNAL_STORAGE  
WRITE_EXTERNAL_STORAGE
```

Once your app has storage permissions, your app can access the device's storage at any time. This means that you may download personal files or remove sensitive information from your device. Think twice before giving

storage permissions to untrusted apps, as they can be harmful.

Added permission-

uses-permission

```
android:name="android.permission.READ_EXTERNAL_STORAGE" /
```

uses-permission

```
android:name="android.permission.WRITE_EXTERNAL_STORAGE" /
```

3. XML files:

The Android platform uses XML files in projects for a variety of purposes, from providing a basic application configuration in a manifest file to defining a user interface using a layout XML file.

Elements use these standard files as if they were using the Java language, giving Elements developers full native access to the same UI controls and functionality as any other Android developer.

Fire integrates with Android Studio, the official Google IDE for Android development used by Java language developers, allowing you to edit XML layouts and other XML resource files for Android.

Working with xml files-

```
res/layout/activity_main.xml
```

4. Java Files:

Java is an automatically generated AAPT (Android Asset Packaging Tool) file that contains the resource IDs of all the resources in the res/directory.

When you create a component in the activity_main.xml file, the ID of the corresponding component is automatically generated in that file. You can use this identifier in the action source file to perform any action on the component.

MainActivity.java provides most of the code to get started (as mentioned earlier, you had the option to change it when creating a new application project). This is the code for the first screen of the app, which is the first activity. Write code that performs certain functions, such as handling button press logic and wanting to vibrate the phone.

The "main" activity is the activity that loads first and the rest of your application. Every application can have multiple activities, therefore you can list other activities to load and use later on but you can only have one "main" activity. [1]

Working With Java Files:

```
java/MainActivity.java
```

4. CONCLUSION

This application can be used for various platforms where the required video is asked to be less space than the original video. It will help to reduce the size or space of the file without reducing its quality which can be helpful for the users to upload and maintain the quality. Video compression is an important part of a recording and storing security camera footage as it compresses raw files into smaller formats. This allows you to save more videos to your hard drive.

Video compression is required for common storage applications, and modern technology reduces system bandwidth or transmission bandwidth. The review of current work should be suitable for modern high-definition video data compression in the current scenario. The most important part of the job is to provide an efficient area analysis scheme to get the best result. Speed and bandwidth ensure maximum video compression.

Android studio is used to implement this application where the application has used Java to operate the project.

REFERENCES

[1]

<https://stackoverflow.com/questions/9704898/how-to-set-my-activity-as-main-activity-in-android> (By-Jared Burrows)

<https://www.techopedia.com/definition/18460/video-compression>

<https://video4change.org/book/video-compression-guide/>

<https://biteable.com/blog/how-to-compress-video/>

<https://marketing.istockphoto.com/blog/what-is-video-compression/>

<https://www.videosurveillance.com/blog/technology/surveillance-cameras/what-makes-video-compression-important.asp>

<https://www.javatpoint.com/android-studio>

<https://www.tristatetechnology.com/blog/firebase-backend-mobile-app/>

<http://android.cn-mirrors.com/tools/studio/index.html>

<https://pspdfkit.com/blog/2018/external-storage-permissions-on-android/>

<https://stackoverflow.com/questions/44178423/what-are-dependencies-in-android>