

MULTIPLE FILE CONVERSIONS

PRESENTATION OF PROJECT WORK

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- ❖ **File conversion** is the conversion of computer data from one format to another.
- ❖ A conversion can be as simple as converting a text file from one character encoding system to another (*e.g. converting a markdown file to html or converting a colored image to grayscale*). It can also be as complex as conversion between different image formats, which requires deeper understanding of compression and encoding algorithms.
- ❖ In this project, we have proposed and implemented a platform (aio.io) for converting files from one format to another **without the use of any server**.
- ❖ Files are converted into different formats using various conversion algorithms.

Introduction.

A Computer File is a blob of information stored on a memory device. These files are used for recording data discretely and are managed and organized by a File system.

Data conversion is the process of conversion of computer data from one format to another. We often need to convert a file to a different format based on our needs. There are many challenges and principles involved in the conversion of file from one format to another. We have attached a separate research on that.

In this project, we researched on various concepts involved and approaches used in converting a file from one format to another, their advantages and drawbacks, feasibility, etc. We use this knowledge to build a better solution for converting files.

Existing Solutions.

- ❖ **Internet dependency:** Websites like smallpdf.com, webresize.com, etc provide online solution to converting a file from one format to another. These solutions would not work with poor connectivity
- ❖ **Privacy Concern :** Giving your personal data to untrusted websites is a high risk to security as these websites can analyse and misuse your data
- ❖ **Memory issue :**Offline softwares like libreoffice, CoUtils ,etc provide an offline approach to this problem but they take a very large memory space
- ❖ **Cost :**Softwares like Acrobat and Photoshop are very expensive.

Proposed Solution.

In this project, we have proposed and implemented a platform (aio.io) for converting files from one format to another **without the use of any server**. Various image(png,jpeg,svg,gif), video(mp4,flv) , audio(mp3,ogg) and file formats (docx,pdf,odf,txt,html,etc) would be converted interoperability between the same file type

Features:

- ❖ **Completely offline:** Files are converted and stored on the user device only
- ❖ **Free to use**
- ❖ **Better Security:** No logs are created on the Website Server

Proposed Solution.

Features:

- ❖ **Faster file conversions** : Since user's device is being used to perform conversions, we get incredible speeds without compromising on efficiency
- ❖ **Small Application Size**

Challenges in Data Conversion Process

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Abstract: Computer files are crucial with respect to Data storage and interpretation. Throughout a computer environment, data is encoded in a variety of ways. Thus, data must be converted in some form before it can be used by a different computer, operating system or program. This document gives a general overview regarding various Challenges that arise during the process of conversion from one format to another.

Keywords: Data, File ,File Format, Encoding , Data Conversion, Lossless, Lossy Conversion.

CONCLUSION

In this paper, the various challenges that could occur in the process of converting a data file from one format to another is discussed. Converting a file from one format to another can be very simple if the standards involved are open and actively maintained. But for proprietary formats, reverse engineering is oftentimes the final solution. Sometimes a conversion also involves a lot of intermediate steps and passes. The conversion will always result in a failure or inexact output, if the target format is incompatible with the source format or does not support all of its features. Finally, the security threats that are the result of using internet enabled services for conversion of a file from one format to another are also discussed.

Analysis of an Audio File Structure Format

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Abstract: Technological innovation has brought a massive leap in data processing. As information turns out to be broadly accessible, various tools have been produced to create more types of format on existing data. In information technology, audio is one of the most flexible types of data that could be manipulated into different forms. In this light, this paper evaluates the conversion of multiple audio files in waveform audio file (.wav) formats to .mp3, wma, and . Aac formats using standard parameters.

Keywords: Audio Conversion, Audio Format, Audio Analysis

CONCLUSION

From the given results and analysis on this study, it can be perceived that among the audio file format evaluated, Waveform Audio File (.wav) format has the biggest file size, and stream size being the original file contrary to the result of Advanced Audio Coding (.aac) format.

Furthermore, the audio duration and the audio sampling rate were not affected by the conversion of audio files from Waveform Audio File (.wav) format to .mp3, .wma, and .aac formats.

The audio overall bit rate changed upon the conversion applied to the audio files resulting to a 77.32% reduction. The highest value of overall bit rate is noted in the Waveform Audio File (.wav) format and the lowest value is on the MPEG-1 Audio Layer-3 (.mp3) format. Overall bit rate of Advanced Audio Coding (.aac) format is variable and so it was not measured exactly by Media Info.

Before any data conversion is carried out, the user or application programmer should keep a few basics of computing and information theory in mind. These includes:

1. **Information Discard Rule:** Information can easily be discarded by the computer, but adding new information takes effort.
2. **Information Addition Rule:** The computer can add information only in a rule-based fashion.
3. **Upsampling Rule :** Up-sampling the data or converting to a more feature-rich format does not add information; it merely makes room for that addition, which usually a human must do (Automatic restoration of information that was lost through a lossy compression process would probably require important advances in artificial intelligence).
4. **Data Rule:** Data stored in an electronic format can be quickly modified and analysed.

Because of these realities of computing and information theory, data conversion is often a complex and error-prone process that requires the help of experts.

Image Conversion Algorithm.

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- .PNG -> .JPG/.WEBP
- .JPG -> .PNG/.WEBP
- .GIF -> .PNG/.JPG/.WEBP
- .WEBP -> .JPG/.PNG
- .SVG -> .JPG/.PNG/.WEBP

```
* 1-> Converting image to base64.  
* 2-> pass base64 to function.  
* 3-> create canvas with that base64 data uri.  
* 4-> set with window.innerHeight and width, so that according to image size.  
* 5-> read the canvas image and change image signature to respective file type  
* 6-> convert canvas to image by toDataURL() function in js.
```

Document Conversion Algorithm

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.TXT -> .PDF

- * 1-> Read txt file as plain text.
- * 2-> According to length of text content, decide the number of pages.
- * 3-> Then by using Open Source library jsPDF() passing arguments as text data.
- * 4-> jsPDF() return a BLOB data, save it as pdf.

.HTML -> .PDF

- * 1-> Read html file as plain text.
- * 2-> According to length of html content, decide the number of pages.
- * 3-> Then by using Open Source library jsPDF() passing arguments as text data.
- * 4-> jsPDF() return a BLOB data, save it as pdf.

Project Mission

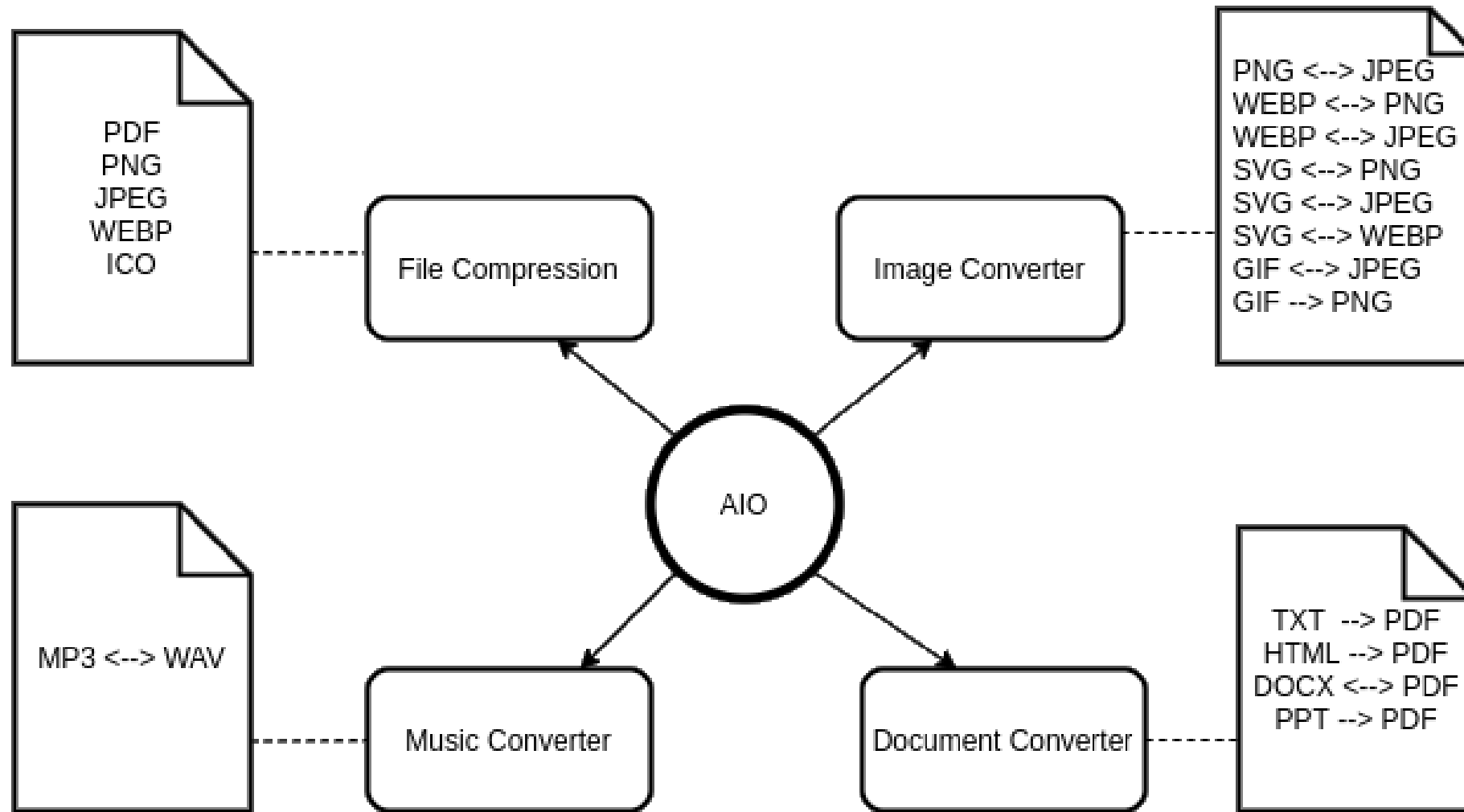
The aim of our project is provide a platform for the file format conversion and compression without the use of server side which allows it to work offline . And keeping the size of application small making it to use anytime, anywhere.

Target Users

We are targeting every users who want to change there file formats for various purposes like online form filing, software application images need in particular format ,etc. Any user who want to particular file format without concerning about its privacy of data and want to save time and efforts.

Software and hardware used :

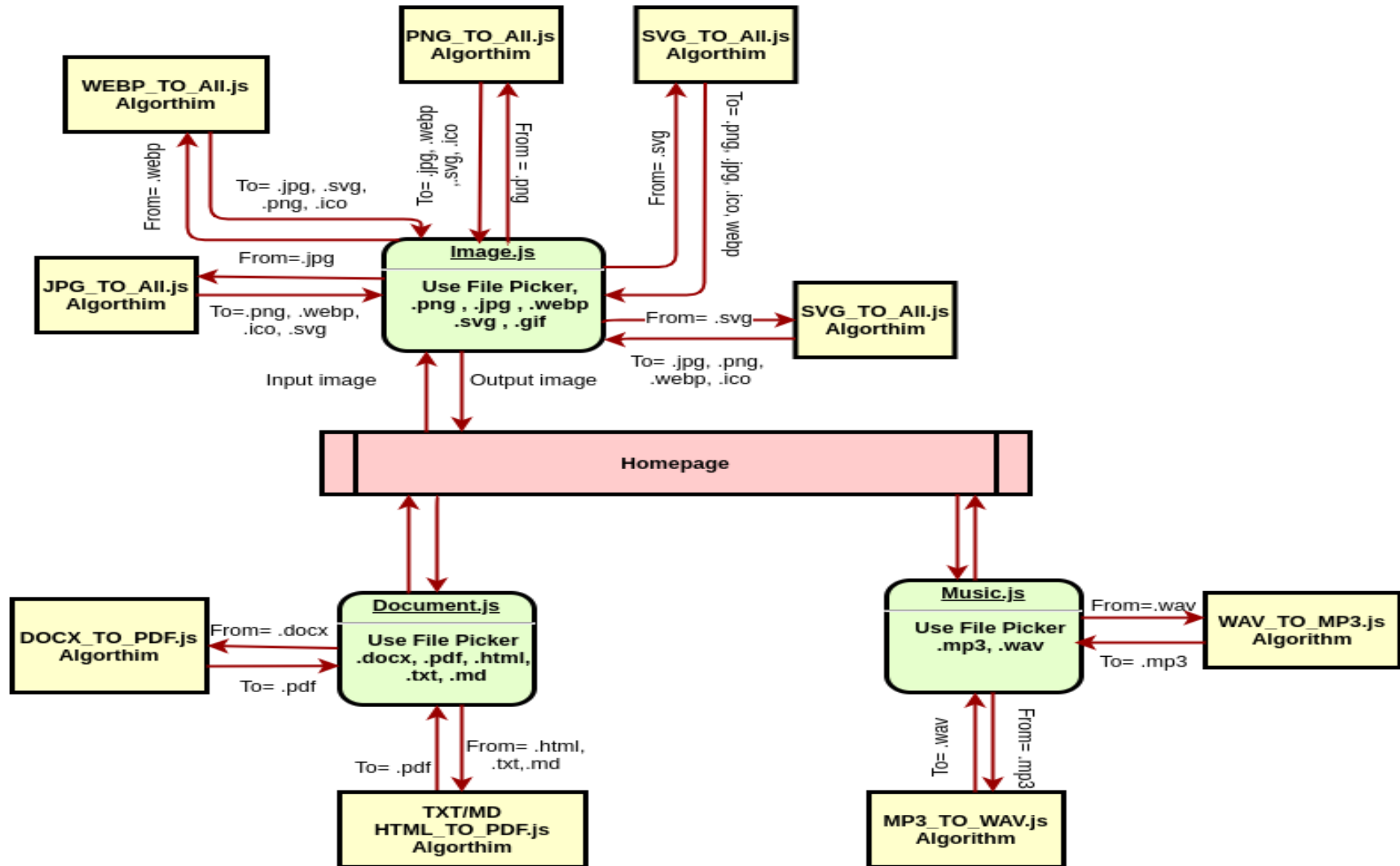
- **Software Used:** VS Code, Git Version Control Software, NPM , Google Chrome, Jest for software testing
- **Languages/Frameworks Used** : HTML5, BulmaCSS , React.js, JSON, NodeJS (in dev mode)
- **Hardware Used** : HP Pavillion laptop with 1Tb hard disk, 8gb ram and i5 7th Gen Processor running on Linux(Ubuntu)



Component Diagram

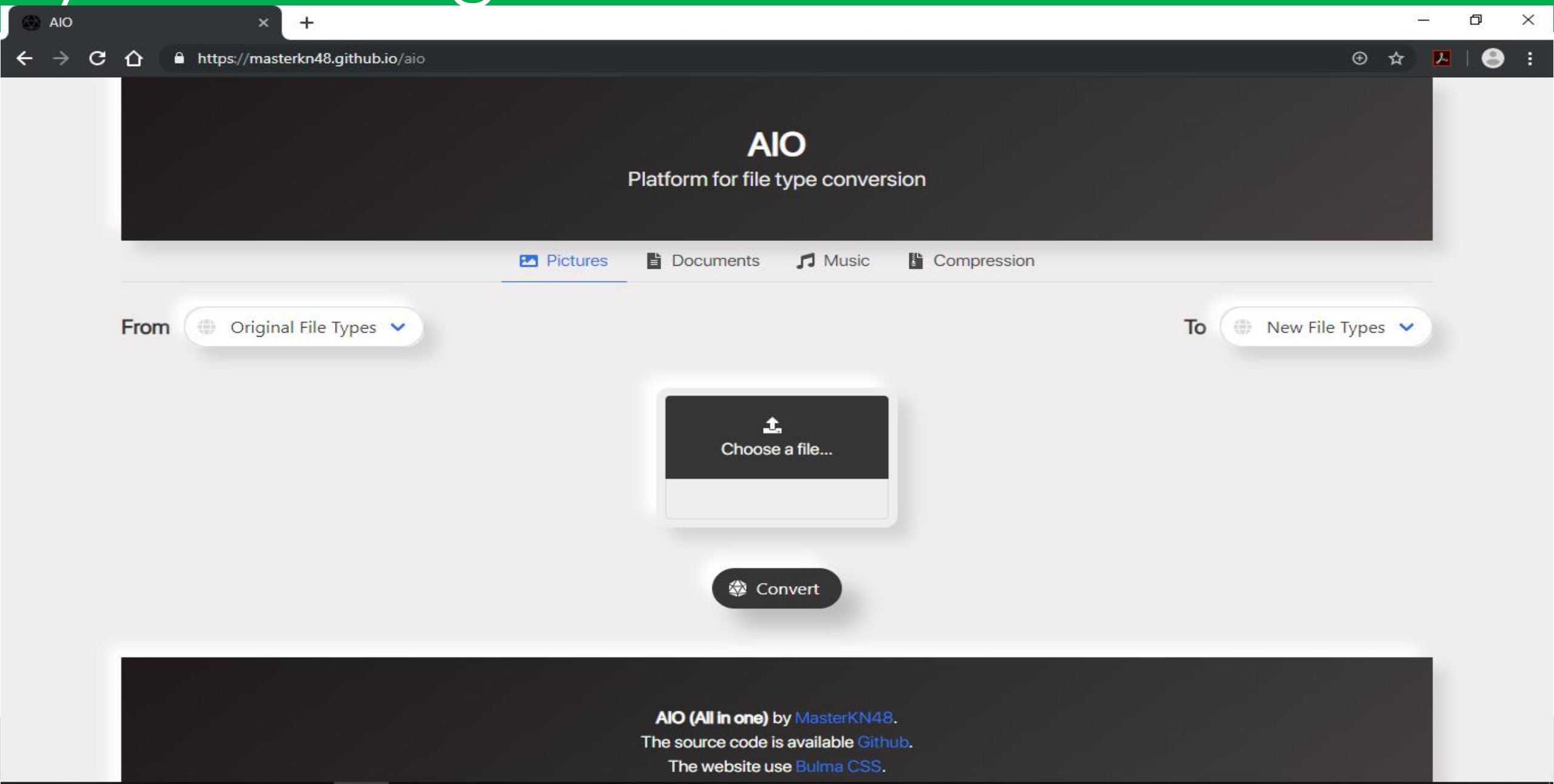
Data Flow Diagram

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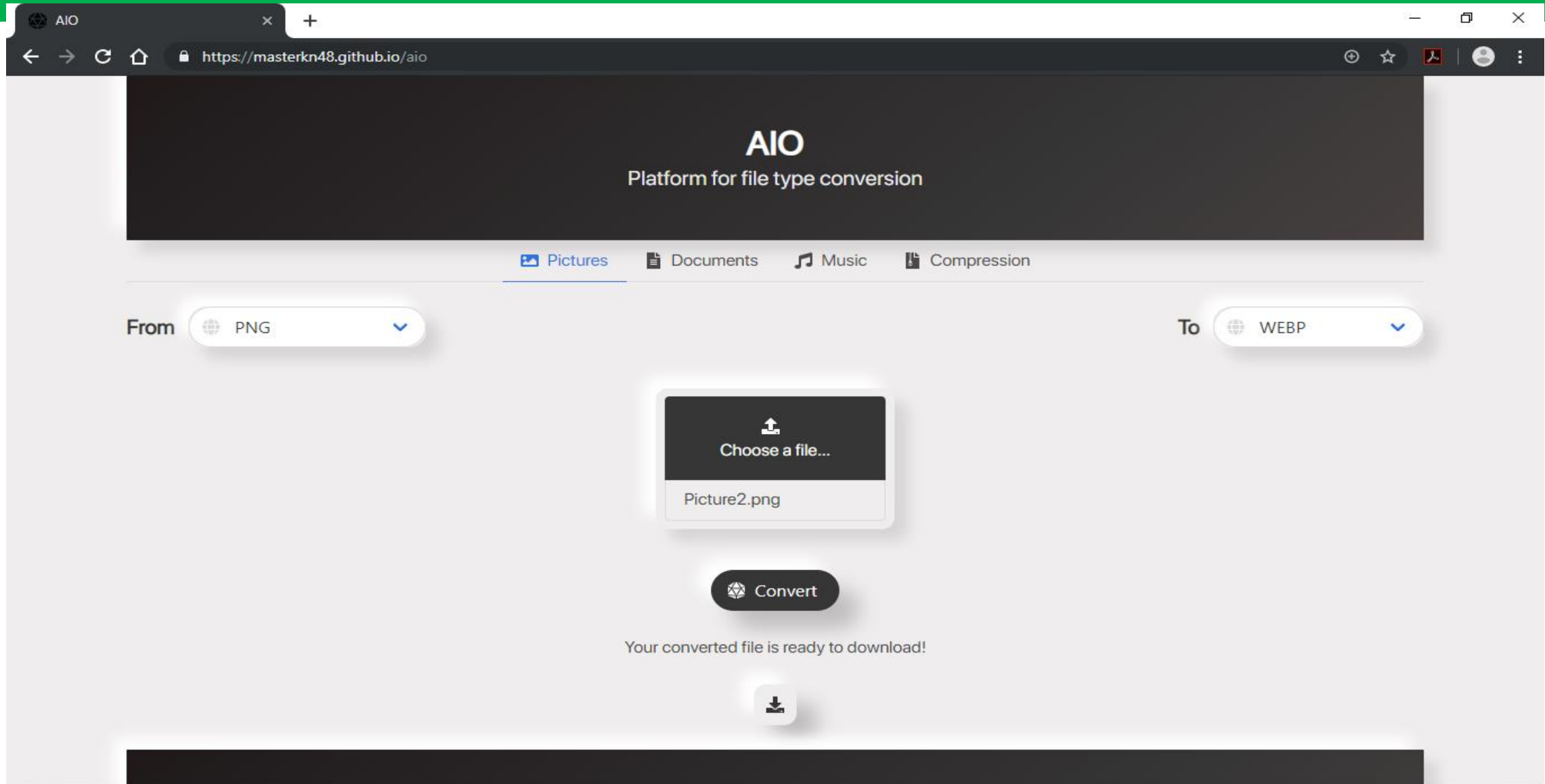
System Design: Preview

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System Design: Preview

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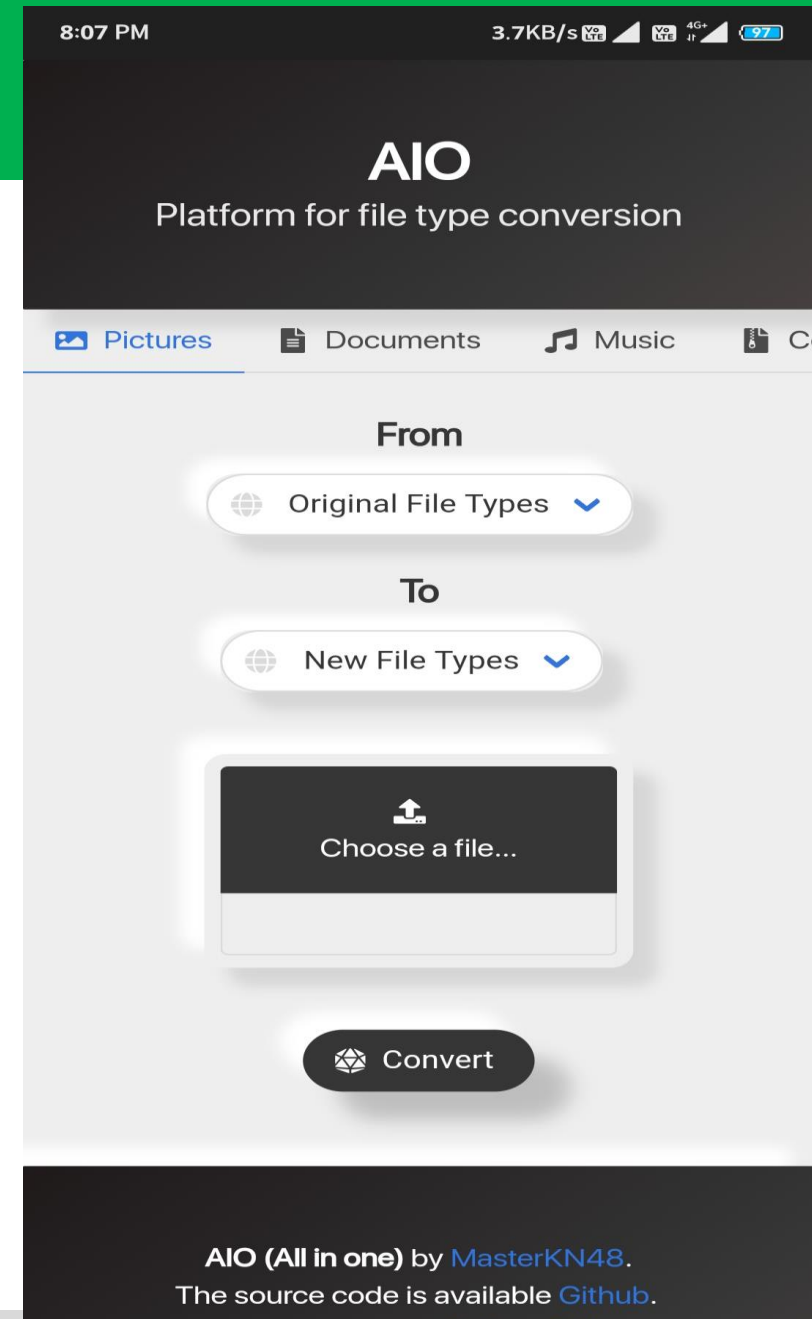


System Design: Preview

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Source Code : <https://github.com/MasterKN48/aio/>

Live Demo : <https://masterkn48.github.io/aio/>



System Design: Task Log :

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<i>Milestones</i>	<i>Date Assigned</i>	<i>Date Completed</i>	<i>Task</i>
1. Study over file conversion	5/01/2020	Till the project end	Study about various aspects of File formats and conversion.
2. Designing the application	10/01/2020	15/01/2020	Task is to create design of application like wireframe, mockups, understanding design challenges.
3. Modules Generation	16/01/2020	20/01/2020	Deciding number of modules 1-> Image Convertor, 2-> Document Convertor, 3-> Compressed File Convertor, 4-> Audio Convertor
4. Creating Image Convertor	21/01/2020	02/02/2020	Searching about images conversion algorithms, and created all image convertor

System Design: Task Log :

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<i>Milestones</i>	<i>Date Assigned</i>	<i>Date Completed</i>	<i>Task</i>
5. Create Document Convertor	03/02/2020	10/02/2020	Creating document handling modules.
6. Document Modules	11/02/2020	15/02/2020	Study about documents file format. Creating algorithm design for txt to pdf.
7. Document Modules	16/02/2020	20/02/2020	Study about open formats, proprietary formats, worked on html to pdf and pdf to html.
8. Creating File Compression Modules and documents modules	21/02/2020	30/02/2020	Searching about compression, conversion algorithms, and creating algorithms for file compression

- ❖ The Purpose and objective of our project is to provide security to user who doesn't want to share crucial data to anyone else but need a platform to convert there file without any fear of data privacy.
- ❖ This project will provide a platform which can available anywhere and be use at any time.
- ❖ This project will provide small size very fast file convertor.

- ❖ www.wikipedia.com : file formats details
- ❖ www.fileFormat.com : file formats details and its associated softwares.
- ❖ www.reactjs.org : for learning reactjs
- ❖ *evaluating file formats* nationalarchives.gov.uk/documents/information-management/evaluating-file-formats.pdf This guidance will help you to evaluate files.
- ❖ A Highly Accurate PDF-To-Text Conversion System for Academic Papers Using Natural Language Processing Approach
https://www.researchgate.net/publication/327992611_A_Highly_Accurate_PDF-To-Text_Conversion_System_for_Academic_Papers_Using_Natural_Language_Processing_Approach
- ❖ Conversion of DICOM Image in to JPEG, BMP and PNG Image Format
https://www.researchgate.net/publication/258789781_Conversion_of_DICOM_Image_in_to_JPEG_BMP_and_PNG_Image_Format

We are willing to express our profound gratitude and heartiest thanks to all the researchers in the field of File Handling and System Programming , specially to the developers of File Sytems, who have made their research work easy to accomplish.

- Ansh , Nitin and Kunal

**Multiple File
Conversion.**

THANK YOU!