PLUGIN BASED SYSTEM FRAMEWORK FOR IMAGE PROCESSING

Major Project Report

Submitted in partial fulfillment of the requirements for the degree of

Bachelor of Engineering (Computer Engineering)

by:

Priyanka Chikane	TU3F1718003
Ankit Gore	TU3F1718005
Krupali Tayade	TU3F1718008
Aditya Kumar	TU3F1718030

Under the Guidance of
Prof. Vishwajit Gaikwad

Department of Computer Engineering

TERNA ENGINEERING COLLEGE

Nerul (W), Navi Mumbai 400706

(University of Mumbai)

(2020-2021)

TERNA ENGINEERING COLLEGE, NERUL

Department of Computer Engineering

Academic Year 2020-2021

CERTIFICATE

This is to certify that the major project entitled **"PLUGIN BASED SYSTEM FRAMEWORK FOR IMAGE PROCESSING"** is a bonafide work of

Priyanka Chikane	TU3F1718003
Ankit Gore	TU3F1718005
Krupali Tayade	TU3F1718008
Aditya Kumar	TU3F1718030

submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the Bachelor of Engineering (Computer Engineering).

Guide   **Head of Department**   **Principal**

Project Report Approval

This Major Project Report – an entitled "**PLUGIN BASED SYSTEM FRAMEWORK FOR IMAGE PROCESSING**" by following students is approved for the degree of *B.E. in "Computer Engineering"*.

Submitted by:

Priyanka Chikane	TU3F1718003
Ankit Gore	TU3F1718005
Krupali Tayade	TU3F1718008
Aditya Kumar	TU3F1718030

Examiners Name & Signature:

1.---

2.---

Date: 15 May 2021

Place: Nerul

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Priyanka Chikane   TU3F1718003

Ankit Gore   TU3F1718005

Krupali Tayade   TU3F1718008

Aditya Kumar   TU3F1718030

Date: 15 May 2021

Place: Nerul

Acknowledgement

We would like to express our sincere gratitude towards our guide **Prof. Vishwajit Gaikwad,** Project Coordinators **Prof. Pramila Mate, Prof. Randeep Kaur, Prof. Deepthi Ommen** for their help, guidance and encouragement, they provided during the project development. This work would have not been possible without their valuable time, patience and motivation. We thank them for making my stint thoroughly pleasant and enriching. It was great learning and an honor being their student.

We are deeply thankful to **Dr. Archa Mire (H.O.D Computer Department)** and entire team in the Computer Department. They supported us with scientific guidance, advice and encouragement, they were always helpful and enthusiastic and this inspired us in our work.

We take the privilege to express our sincere thanks **to Dr. L. K. Ragha** our Principal for providing the encouragement and much support throughout our work.

Priyanka Chikane	TU3F1718003	--------------------------
Ankit Gore	TU3F1718005	--------------------------
Krupali Tayade	TU3F1718008	--------------------------
Aditya Kumar	TU3F1718030	--------------------------

Date: 15 May 2021

Place: Nerul

Table of Contents

WORK DISTRIBUTION

Group Members	Work Done
Aditya Kumar	• Gathering Information related to topic, • Handling conversation on BitBucket, • Working on report and powerpoint presentation, • Help in Coding part Connect Plugin Load time linking in C, • Help in survey paper publication.
Priyanka Chikane	• Gathering Information related to topic, • Help on report and powerpoint presentation, • Help in Coding part image operation in C, • Publishing paper and Survey Paper documentation, • Demo video creation.
Krupali Tayade	• Gathering Information related to topic, • Help on report and powerpoint presentation, • Help in Coding part image operation in C, • Publishing paper and Survey Paper documentation, • Demo video creation.
Ankit Gore	• Help on report and powerpoint presentation, • Working on Coding part Collecting information of image operations from co-members and Creating Plugin manager by statically linking files in C, • Help in survey paper publication., • Demo video creation.

ABSTRACT

The project aims to describe the plug-in-based system framework for image processing. The main aim of developing this plug-in-based framework is to make image processing easier for the users. We are developing software for image processing using a plug-in-based system framework. In this more plug-in can be added in order to perform different operations on image. A framework will be developed to open an image. The user can open the image and perform certain operations like colour transformation etc. The result of the project being implemented is supposed to provide accurate colour transformation of the given image as the output, which specifies that plug-in-based framework works in an intended way.

CHAPTER 1: INTRODUCTION

1.1 AIM AND OBJECTIVES OF PROJECT:

In today's world we all need a software that will give us access to the hands-free operation for our image processing on our fingertips like it should work smoothly and faster, change color, require less space in PC and laptops, not require additional software to process, portable to work on older versions of windows. In this project we will create a program framework that will help the user to enhance an image on a low-resolution PC, laptop and using a small plug-in in-app software to install without a framework using DLL (Dynamic Link Library) to establish a connection between the plug-in code and the existing program framework. Here, the libraries are to be created using C language. The Framework is used basically for the different image processing operations such as image darkening, image brightness, image effects, Grayscale effect.

1.2 SCOPE:

This project will consist of creating a system framework based on plugins for image processing. The user can Morph pictures and apply basic filters.

CHAPTER 2: LITERATURE SURVEY

In various programs, an update refers to a patch or a feature upgrade for which we have to download it and then install the whole program again. This could end up being time consuming, even if the update was meant to be a small extension of the current system. This issue stems from the fact that the code base is inflexible to allow a small patch without recompiling the entire software i.e., the code base is a monolithic piece of code. This is something that we wanted to improve upon.

Name of Paper	Author	Year	Advantages	Disadvantages
Marvin - A Tool for Image Processing Algorithm Development	1)Gabriel Ambrósio Archanjo 2) Fabio Andrijauskas	2008	1. Every feature for image processing is developed externally through plug-ins.	It is written in JAVA.
2. Hadoop Image Processing Framework	1)Sridhar Vemula 2)Christopher Crick	2015	1.Online access is provided for the saved files. 2.Flexible for an online framework	1.Cannot be extended by users. 2.No user customization available 3.Multiple files can't be accessed or executed.

CHAPTER 3: TERMINOLOGY

Plugins: Plugins are simple programs that add functionality to the host program without altering it.

Plugin Manager: These are optional programs that are used in tandem with plugins. Their main role is for management of plugins which include:

- enable/disable plugins
- scan for plugins.
- Check plugin status.

They are primarily used in the following cases:

- Using too many plugins
- Using various types of plugins

Static linking: Here the external libraries have already been embedded onto the main program i.e., all binary files have been linked to the main program. However, most programs also need to run functions from the system libraries, and these library functions also need to be loaded.

In the simplest case, the necessary library functions are embedded directly in the program's executable binary file. Such a program is statically linked to its libraries, and statically linked executable codes can commence running as soon as they are loaded.

Dynamic linking: Here the dynamically linked program has a small linking function that is called when the program is run. This just maps the link libraries into memory and runs the faction that the code contains. The links library determines what are all the dynamic libraries which the program requires along with the names of the variables and functions needed from those libraries by reading the information contained in sections of the library.

After which it maps the libraries into the middle of virtual memory and resolves the references to the symbols contained in those libraries. We don't know where in the memory these shared libraries are actually mapped: They are compiled into position-independent code (PIC), that can run at any address in memory.

CHAPTER 4: METHODOLOGY

In the Iterative model, the iterative process starts with a simple implementation of a small set of the software requirements and iteratively enhances the evolving versions until the complete system is implemented and ready to be deployed.

An iterative life cycle model does not attempt to start with a full specification of requirements. Instead, development begins by specifying and implementing just part of the software, which is then reviewed to identify further requirements. This process is then repeated, producing a new version of the software at the end of each iteration of the model.
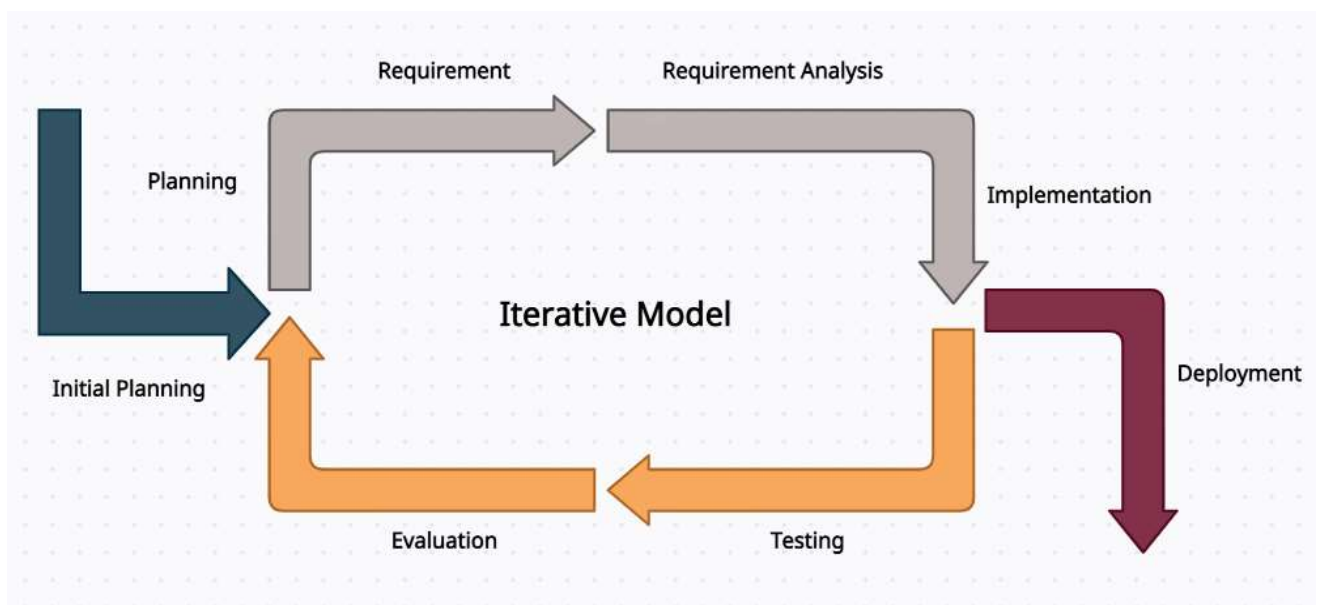
We chose Iterative model for the following reasons:

- It is easily adaptable to the ever-changing needs of the project as well as the client.
- It is more cost effective to change the scope or requirements in the Iterative model.
- Parallel development can be planned.
- Testing and debugging during smaller iterations are easy.
- Risks are identified and resolved during iteration; and each iteration is easily managed.
- One can get reliable user feedback, when presenting sketches and blueprints of the product to users for their feedback.

CHAPTER 5: PROPOSED SYSTEM

The proposed system is where a plug-in-based system framework is developed. As there is no tool available for the users to download it and from a given API to install it on the system. There is no need to restart the system, it can install automatically and after the successful installation, the tool is ready to use. It becomes simple to work on the low configuration computers and it is basically developed in C language so it has low processing power and within minimum time it delivers a highly configured result. Here we have developed a static library and API which contain the features for the image processing.
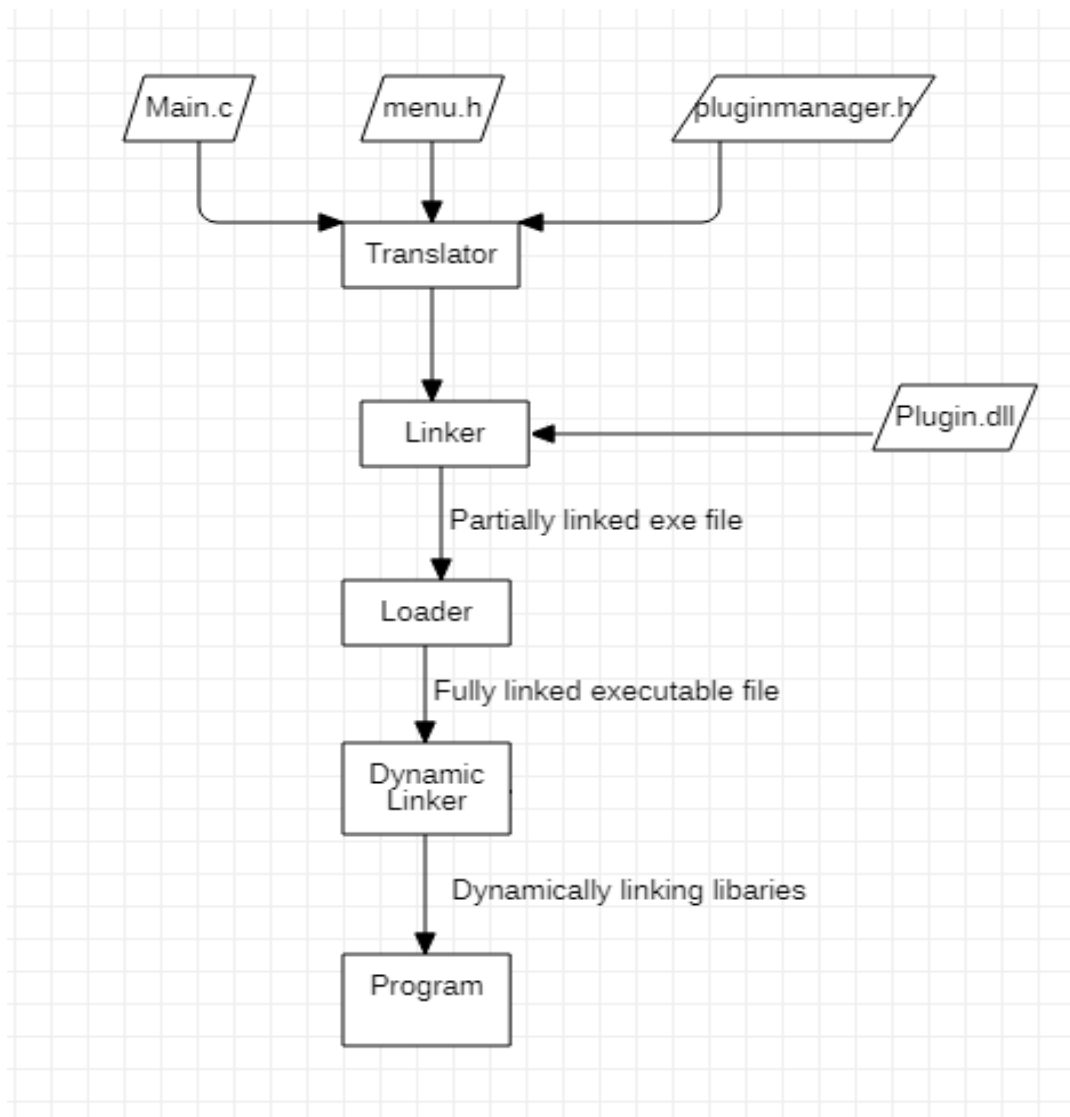
Fig 5.1 : Library creation and dynamic Linking

The below image fig(b) shows the working flow of the system i.e., step by step implementation of the system.

Step 1: Select image tool from the file directory.

Step 2: Select the image processing operations like grayscale, histogram, colour conversion.

Step 3: If a tool is available then apply operation.

Step 4: If tool is not available then go to the all-plug-in tool

Step 5: Select tool.

Step 6: Download, then it will get installed automatically.

Step 7: Then apply the operation.

Step 8: Save image.
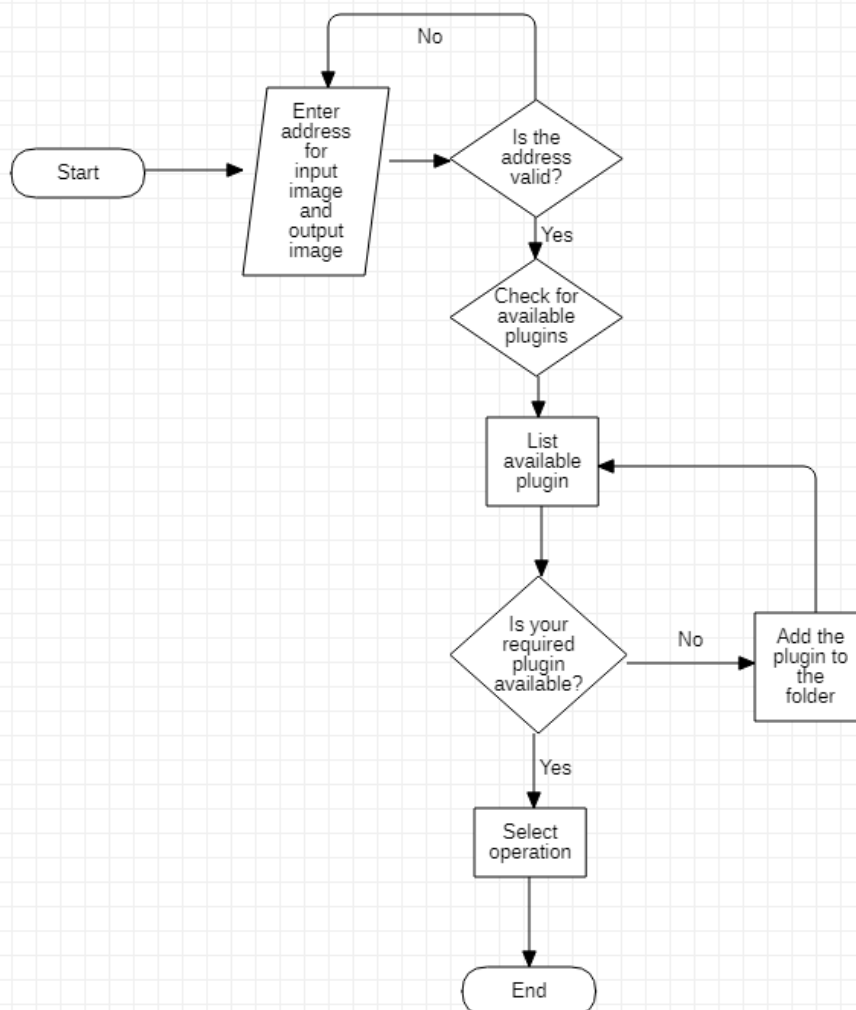
Fig 5.2 : System Flow Diagram

CHAPTER 6: IMPLEMENTATION AND RESULTS

Main Menu of System:


```
C:\Users\Aditya\Desktop\AKP\akp.exe

Please Enter the Full Path to open image :
Image/A.bmp

Please Enter the Full Path to save image :
Output/Aout.bmp

1.Negative image
2.color convertion
3.Dark image
4.Bright image
5.Color to sepia
6.Blur image
7.Rotate image

Enter 0 to exit
Enter your choice for operation:
```

Perform Operation on Image:

1. **180 degree rotation on image**

| **Input Image** | **Output Image** |

2. Negative image on color image

Input Image   **Output Image**

CHAPTER 7: CONCLUSION

As we know that there are various software resources available in the market for performing various image processing operations, but our proposed model delivers a high performance, and extensive work at low processing time. The most important feature of the proposed system is that if the image processing feature is not available, then the user can add it by downloading it and then it gets installed automatically without any manual interruptions.

REFERENCES

[1] Magar, Shyamsundar & Kolte, Jagruti & Shedge, Snehal & Mahajan, Rupali. (2019). Plug-in Based System Framework for Image Processing. 1069-1074. 10.1109/ICCMC.2019.8819768.

[2]. Fabin Wenzel & Rolf-Rainer Grigat "A Framework for developing image processing algorithms with minimal overhead", in prot of the 5thWSEAS International conference on signal speech & image processing, 2005 (pp 185-180).

[3]. Roger L. East on "Fundamentals of digital image processing", 22nd Nov 2010.

[4]. Priyanka c. Dighe& shantikguru "Survey on image resizing techniques" IJSR 12th Dec 2014.

[5]. Ot hman khalifa, "wavlet coding design for image data compression" IEEE The International Arab journal of information technology vol 2, April 2005.

[6]. Gaurav vijayargiya, "A survey of various technique of image compression" IEEE international journal of computer science & informat ion security vol 11, no. 10, October 2013.

[7]. Dinesh sonkey& M. P. Parsai, "comparison of histogram equalization techniques for image enhancement of grayscale image of dawn & dusk", vol3, jul-aug, 2013, pp -2476-24.

PAPER PUBLICATION

Paper Title : A Survey Paper on System Frameworks for Image Processing

Published On : 19 May, 2021

Authors : Ankit Gore , Krupali Tayade, Priyanka Chikane, Aditya Kumar, Prof. Vishwajit Gaikwad

Paper Access Link:

1. E-Cerification

Certificate

It is here by certified that the paper ID : IJRASET34319, entitled
A Survey Paper on System Frameworks for Image Processing

by

Priyanka Chikane

after review is found suitable and has been published in
Volume 9, Issue V, May 2021

in

International Journal for Research in Applied Science &
Engineering Technology
Good luck for your future endeavors

By warn

Editor in Chief, IJRASET