Software Lab
Project Report for
Image-ica : The Photo Editor

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1 Introduction

This is a report for development of unique photo editor Image-ica which support different offline features. There are many GitHub projects which are freely available but are struck with basic functionalities. Those projects which have advanced functionality are either scattered everywhere or have subscription charges of use.

This report also contains the details for various processes used for the task which include requirement gathering, analysis, design, coding and testing and deployment.

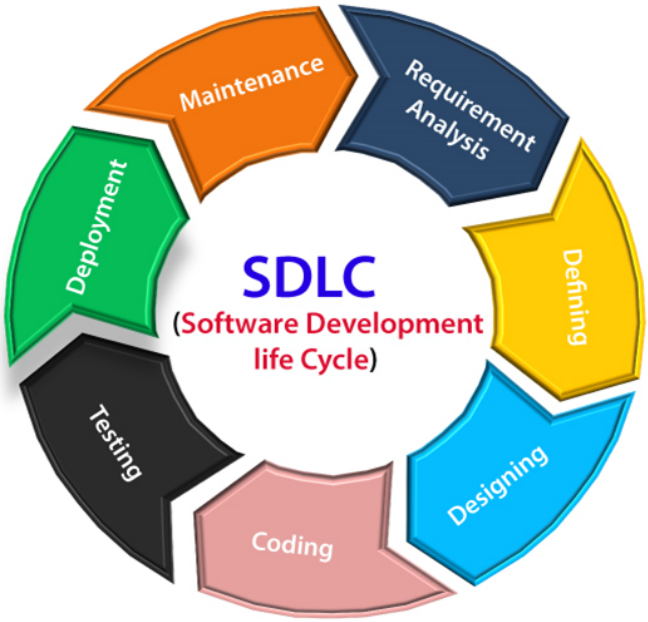

Figure 1: Development Life Cycle

2 Motivation

There are many factors which guided us to reach a unanimous decision of building a photo editor software from the scratch. The few of the reasons are listed as follows.

- Many photo editors available online and required internet connection for whole period.
- Many features are for the licensed version only and support only basic operation in free version.
- Not a single software provides all these operations.

The basic feature which are included in the software are also mentioned below.

1. Zooming
2. Rotation
3. Flipping
4. Gray-Scaling
5. Viewing

After the development of basic features, there were some opportunities to develop some advance feature which will provide the uniqueness in the project. Building architecture independent software was one of the topic priority of the project. The advance feature is also mentioned below.

1. 1-click Encryption and Decryption
2. Color Pop
3. Fast and Powerful Filters (Sepia,Negative,Black & White)
4. Histogram (R, G & B)

3 User Documentation

The following steps can be easily followed by user to enjoy the functionality of the project.

1. Download the Repository from Github Image-ica: The Photo Editor
2. pip3 install -r requirement.txt
3. python3 photo_editor.py
4. Click the Load Button to start the project.
5. Select any photo file with [.jpg, .png] format.
6. Select any of the following operation to perform.
    - 1- Click Encryption & Decryption with password.
    - ColorPopping of an Image
7. Use button Previous & Next to go before and after the current image file.
8. Use SAVE button to save the changes performed on file.
9. Use Close Button to exit from file.

4 Requirement

The usability of the project depends on the minimum requirement for the hardware and software on computer system to perform all operations of the project.

1. Internet connection (for installing the required packages, one time)
2. Python3
3. Intel i3 processor or newer
4. 2GB RAM or more
5. Graphics processor (optional, but recommended)

5 Implementation of Project

For performing various operations, various modules and libraries are used which improves the usability of the projects.

- Python3 for back end development
- PyQt5 for UI design and functionality
- Numpy for image processing operations
- Pycryptodom for cryptographic operations
- PIL for adds support for opening, manipulating, and saving many different image file formats.

6 Software Demonstration

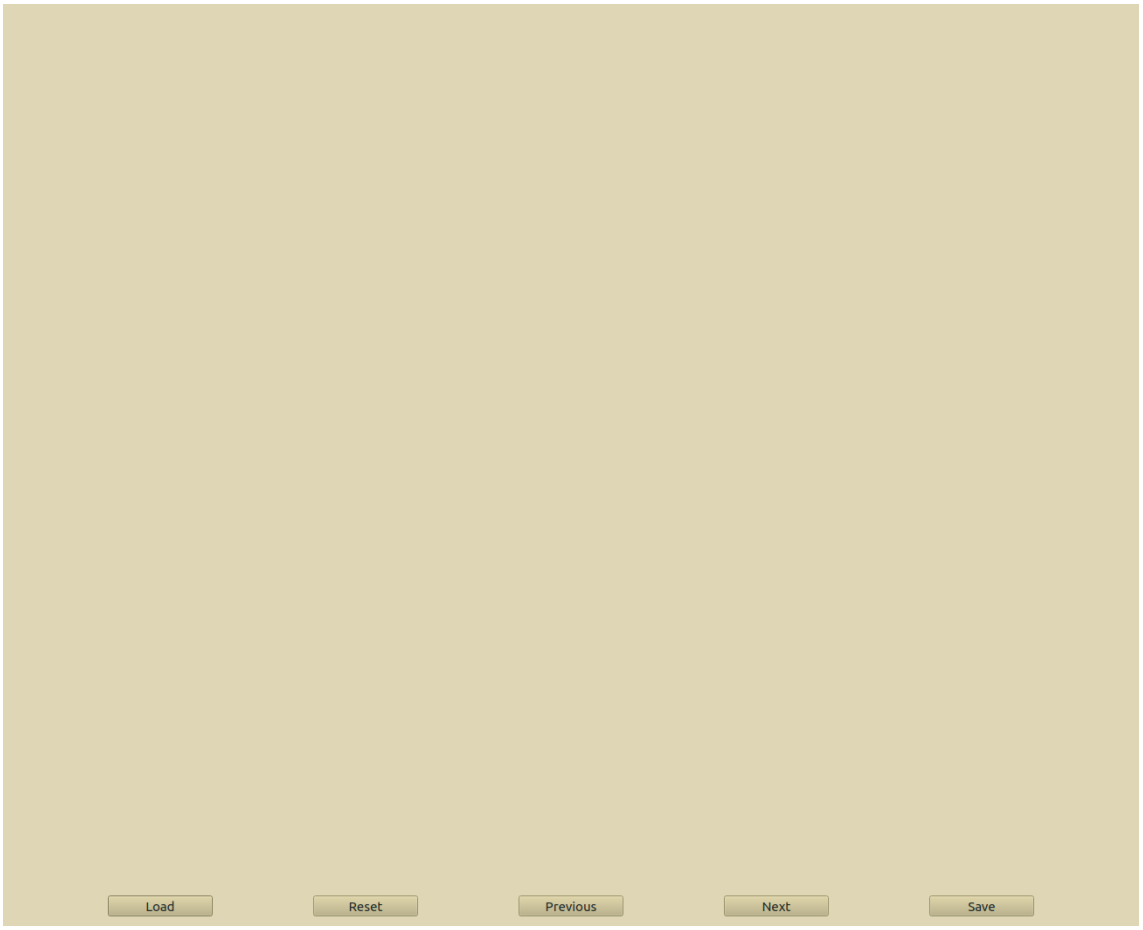

Figure 2: Module 1 UI Interface

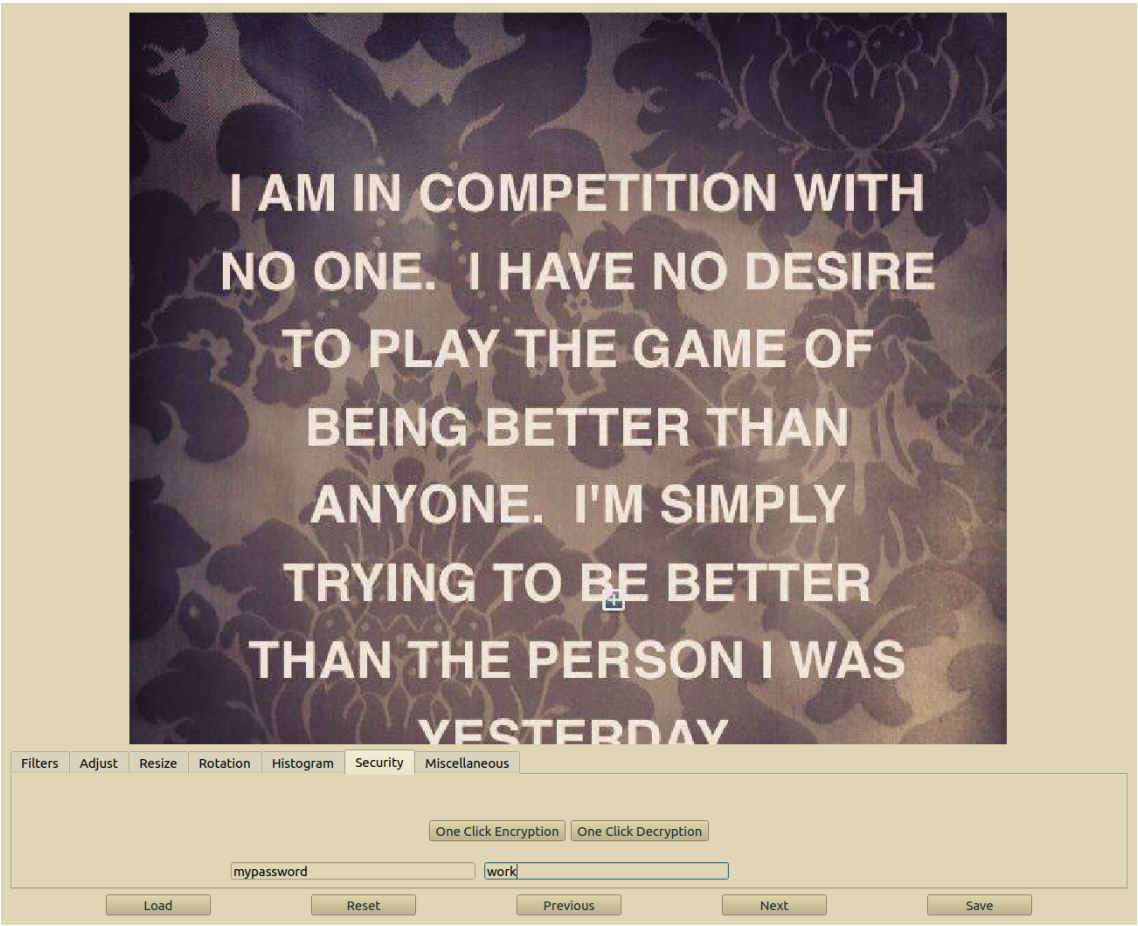

Figure 3: Module 2 Encryption & Decryption

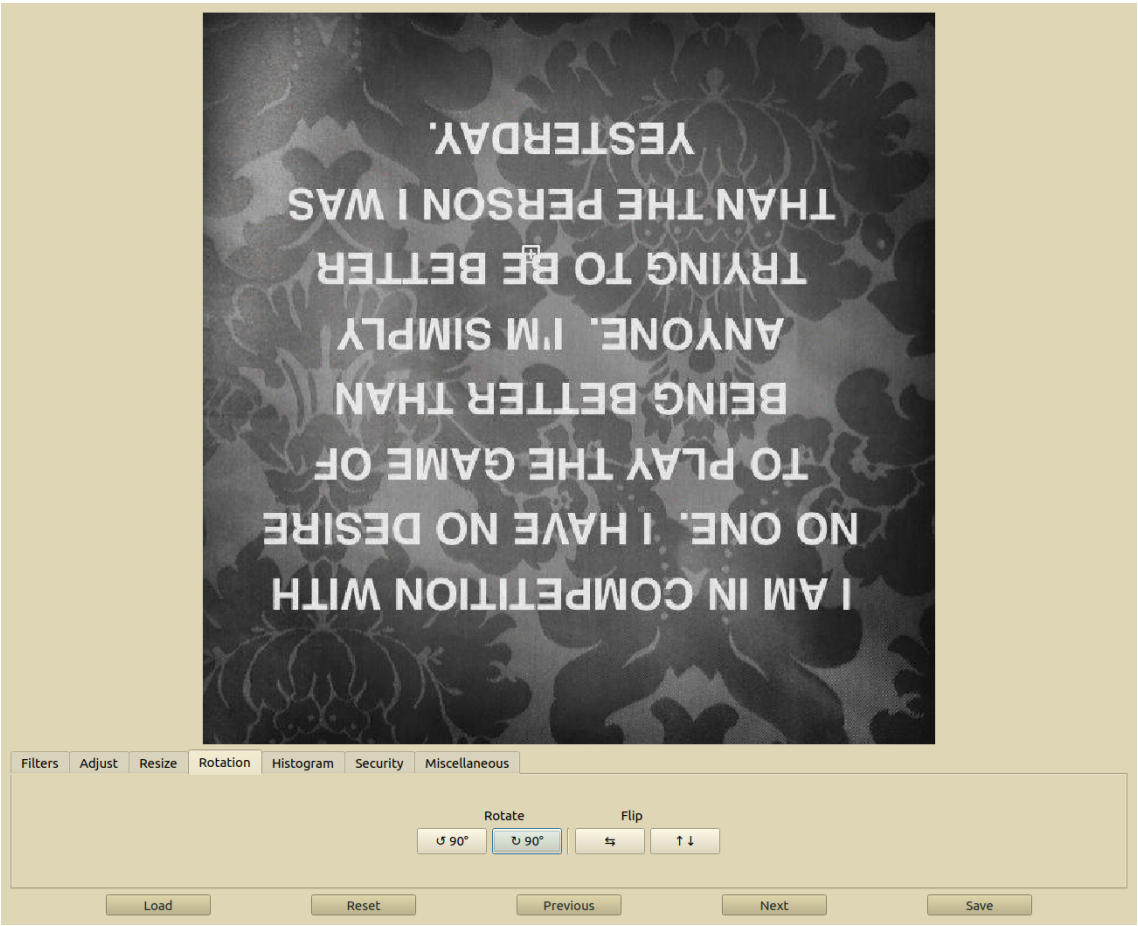

Figure 4: Module 3 Rotation & Flipping

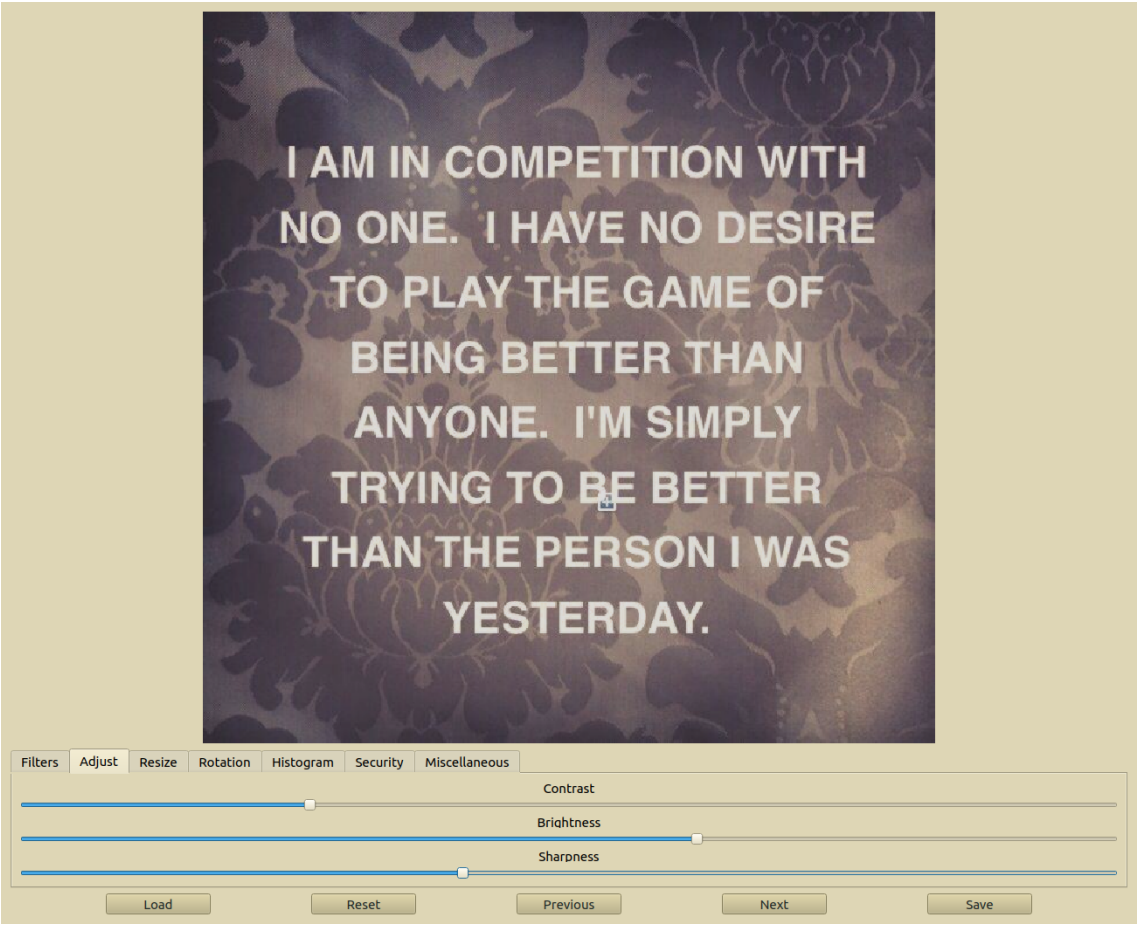

Figure 5: Module 4 Adjust

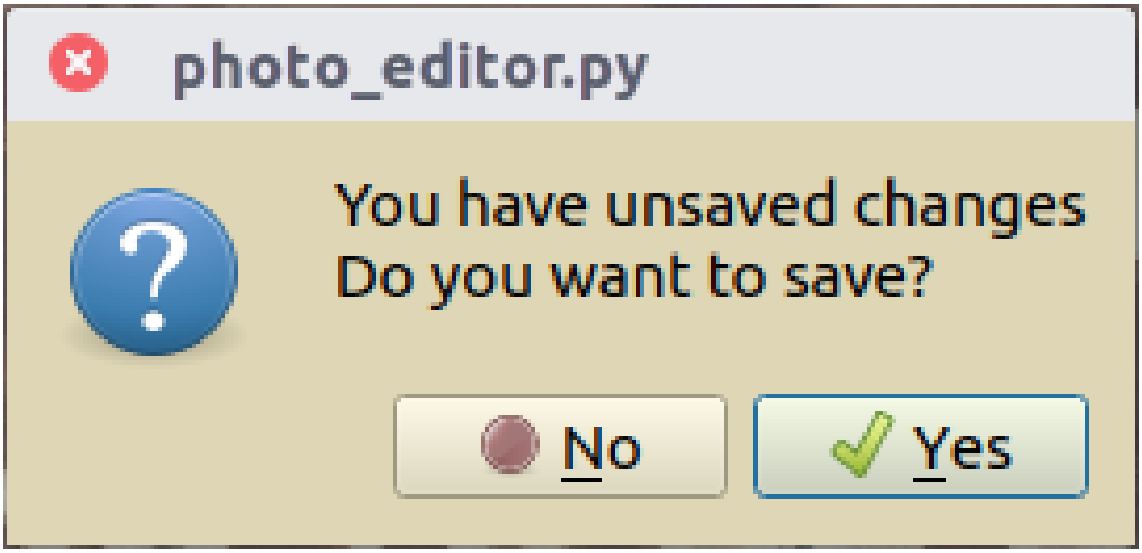

Figure 6: Module 5 Save Changes

7 Effort

7.1 Time distribution

1. Requirement Analysis - 10%
2. Design - 20%
3. Basic Features Implementation - 15%
4. Advance Features Implementation - 30%
5. Testing & Deployment - 25%

7.2 100% Challenges Completion

1. 1 click Lossless Encryption & Decryption
2. Efficient (numpy) implementation of features (Histogram)
3. UI UX Development using PyQT5
4. Miscellaneous Feature - ColorPopping.

7.3 Contribution

1. Anand Bhararia - Features Development & Documentation.
2. Rohit Kumar Singh - Feature Development & Optimisation.
3. Basant Kumar Bhala - User Interface & User Experience.

8 References & Citations

1. TOAST UI ImageEditor
2. GIMP
3. Papaya