

Photo Editor Requirements Document

1. Introduction

1.1 Overview

The Photo Editor project is a web application designed to enhance and manipulate digital images. It allows users to edit and enhance their photos with a variety of tools and features, including cropping, resizing, adjusting brightness and contrast. The software is user-friendly, offering an intuitive interface and the ability to undo or redo actions. The project is aimed at individuals who want to improve their photos or use them for personal or professional purposes. The end goal of the project is to provide users with a comprehensive tool that can help them create high-quality images with ease.

1.2 Scope of the Product

The photo editor project is a web application which can be hosted on any Computer with basic hardware requirements such as :

- RAM – 4 GB
- Operating system – Windows, Ubuntu

The application will be equipped with a user-friendly interface that allows users to easily enhance and manipulate their digital photos. The project will include features such as cropping, resizing, brightness/contrast adjustment, filters, and the ability to undo or redo actions.

In terms of technology, the project will utilize a combination of computer vision and machine learning algorithms, openCV and Python.

The scope of the Photo Editor project includes the following features and functionalities:

- Editing tools: Crop, resize, adjust brightness and contrast.
- Image format support: Support for various image formats, including JPEG, PNG.
- User-friendly interface: A clean and intuitive interface that makes it easy for users to navigate the software and apply editing tools.
- Output options: Ability to save images in different file formats and share them directly from the software.

This scope represents the core functionality of the Photo Editor project, but additional features and improvements may be added over time based on user feedback and market demand.

1.3 Business Case for the Product

The Photo Editor product offers a solution to the increasing demand for high-quality images for personal or professional use. Key benefits include increased productivity, improved image quality, increased reach, increased revenue, and a competitive advantage. Though this product can be used by a wide variety of individuals it would help students with their passport size photos which is very crucial for job applications, presentations and so on.

2. General Description

The photo editor project was created with the goal of providing individuals with a convenient and accessible tool for enhancing and manipulating their digital photos. This project aims to bridge the gap between basic photo editing tools and more advanced image editing software, offering a comprehensive set of features in a user-friendly interface. Target audience includes individuals, hobbyists, amateur photographers, professionals, students and businesses (small and big). During development, the team faced constraints such as balancing the need for advanced features with user-friendliness. Other constraints the team faced include the type of algorithms for face detection, balance between the photo quality and time taken for image processing.

2.2 Product Functions

The photo editor is a comprehensive tool for enhancing and manipulating digital photos. The main functions that will be built into the product include:

- **Cropping:** Users will be able to crop their photos to remove unwanted elements or to focus on a specific area.
- **Resizing:** Users will be able to resize their photos to better fit their intended use, whether it's for social media, printing, or other purposes.
- **Brightness/Contrast Adjustment:** Users will be able to adjust the brightness and contrast of their photos to improve the overall look and feel.

- Filters: Users will have access to a variety of filters that can be applied to photos to create different moods and styles.
- Upload/Download: As part of UI there will be a couple of buttons for Users to Upload images from their local system and download the same post image processing.

2.3 User Characteristics

1. This product is designed for photo editing and is accessible to all types of users.
2. This product is being made available on the web and users should be comfortable accessing and using web-based applications on their computers or mobile devices.
3. It is necessary for users to have either a basic understanding of uploading, editing, and downloading digital photos or some basic experience with using photo editing tools would suffice.
4. Users are motivated to use our application for the purpose of effortlessly resizing and cropping their photos through the use of face detection technology, as well as creating passport size photos online without the need for a physical visit to a store.

2.4 General Constraints

1. The application is being built from scratch, providing flexibility in the technology stack utilized. Thus, there are no constraints in the development procedure.
2. The intended hosting environment for deployment is on the IBM cloud.

2.5 Assumptions and Dependencies

1. Users must have a standard web browser such as google chrome or microsoft edge on their desktop or mobile devices.
2. The Application must use an efficient image processing library (Open CV) to handle photo editing tasks, such as cropping, resizing ,face detection etc.
3. Users must provide valid photo file formats, such as JPEG, PNG.
4. The Application must ensure the security of user data, such as photos and personal information, and comply with data protection regulations.
5. Users must have a proper internet connection on their device, so that the application runs smoothly.
6. Users must have basic knowledge of how to use web applications, as well as the process of uploading, editing, and downloading digital photos.

3. Specific Requirements

3.1 User Requirements

1. The website should have an easy and user friendly interface to navigate between different available options.
2. Users should be able to upload, view and edit the photos on the website and use the tool and edit them easily.
3. The website should have different options such as resizing, format conversion, color adjustments, cropping, color correction, collage creation, face detection, passport size creation tool.
4. Users should be ensured about privacy of the data and that measures are in place to protect their photos.
5. They should be able to download the edited image in their required format such as jpg, png, jpeg, etc.
6. Users should be provided with high quality images without much pixel reduction or loss of quality.
7. The website should load quickly and perform smoothly while handling complex or large size files.
8. The website should be accessible to the users via mobile or web browsers and should be responsive enough in either case.

3.2 System Requirements

1. The website should run smoothly on standard hardware including laptops, desktops, tablets and mobile devices etc.
2. The website should run on all types of operating systems such as Linux, Mac OS and Windows.
3. It should be hosted on IBM cloud and required resources need to be assigned properly for the deployment of applications.
4. The website is developed using the modern programming languages like React Js, Python, Django and JavaScript.
5. The photo editing functionality is achieved using opencv libraries and respective image processing techniques.
6. The website should have better network connectivity to upload images and to ensure that they are processed properly.

7. The website should be optimized properly to perform image processing techniques and face detection algorithms to perform photo editing.
8. Proper logging, error and exception handling should be handled to accommodate any issues with the website.

3.3 Interface Requirements

1. The Photo editing application is a Single Page Application (SPA) built by using React and Python as tech-stacks.
2. This SPA will have several cards with required features such as resize, crop, and image conversion and will also have a feature to download the image to your local.
3. Each card will have a feature title and a short description of what the feature does which helps the user to select.
4. Users can select any feature by selecting or clicking on the feature cards.
5. Upon selection, the component related to the selected feature will be loaded. Allowing users to use the feature he/she selected.
6. Toasters will be used to handle the errors in the interface.

4. Appendices

List of similar products, with notes how they differ from ours:

1. Canva provides basic photo editing tools such as crop, resize, brightness and contrast adjustments but does not provide tools such as image format conversion, passport size photo creation and face detection.
2. Ribbet provides a range of basic photo editing tools, including crop, resize, color correction and collages but does not provide tools such as but does not provide tools such as image format conversion, passport size photo creation and face detection.
3. BeFunky provides a range of basic photo editing tools, including crop, resize, color correction and collages but does not provide tools such as image format conversion, passport size photo creation and face detection .
4. Adobe Photoshop Express provides basic photo editing tools, such as cropping, resizing, collage and color correction but does not provide tools such as image format conversion, passport size photo creation and face detection.
5. PicsArt also provides a range of photo editing tools, including crop, resize, collage and color correction but does not provide tools such as image format conversion, passport size photo creation and face detection.

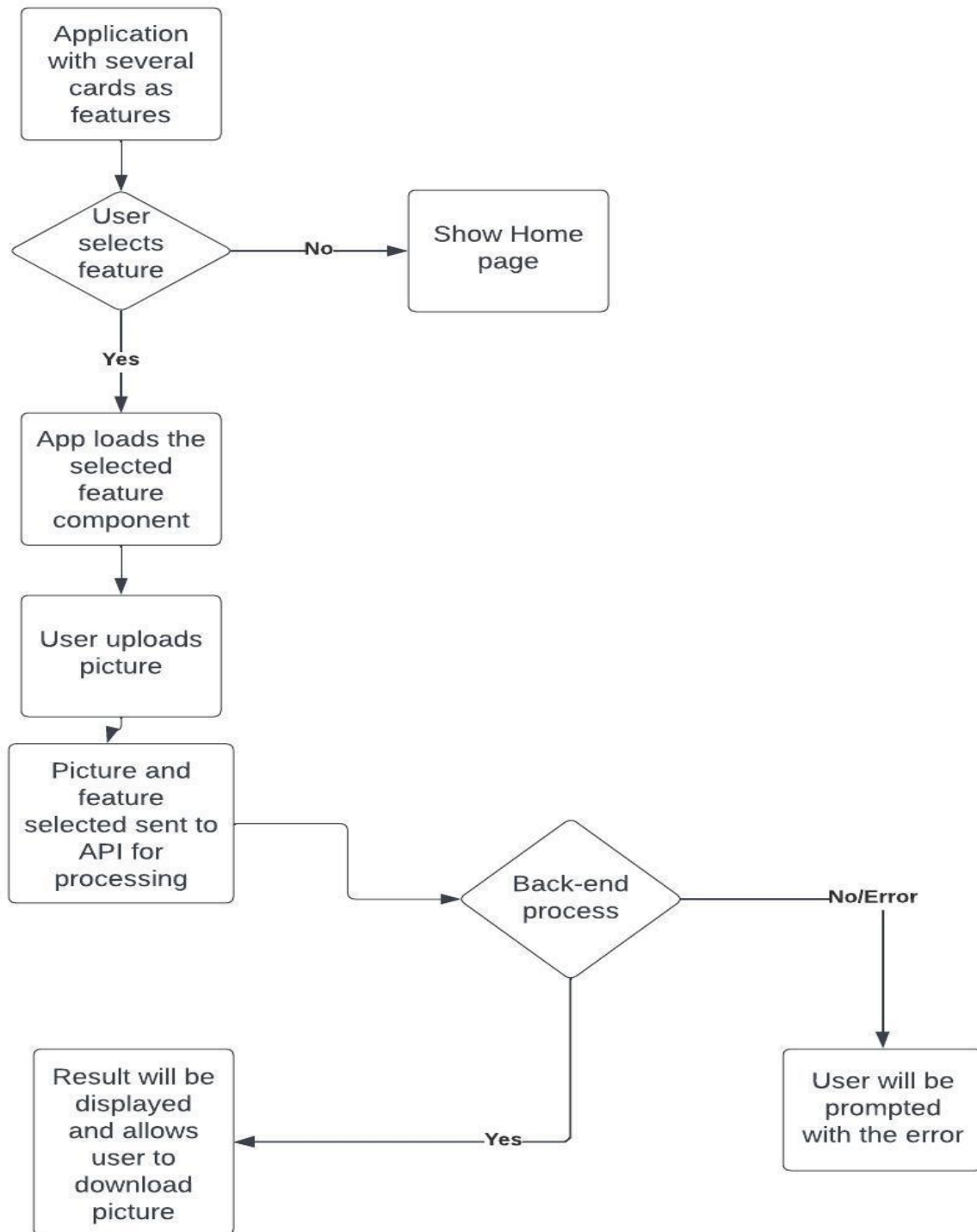
5. Glossary

1. RAM - Random Access Memory
2. JPEG - Joint Photographic Experts Group
3. PNG - Portable Network Graphics
4. SPA - Single Page Application
5. UI - User Interface

6. References

1. <https://www.canva.com/photo-editor/>
2. <https://www.ribbet.com/>
3. <https://www.befunky.com/>
4. <https://www.adobe.com/products/photoshop.html>
5. <https://picsart.com/>

Frontend WorkFlow :



Backend WorkFlow :

