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 Photo Editor project, now advancing into its Fall 2023 phase, stands as a refined web application tailored to transform and elevate digital imagery. Empowering users with a multifaceted toolkit, this platform simplifies tasks from basic cropping and resizing to intricate brightness and contrast adjustments. Prioritizing user experience, our interface focuses on intuitiveness with flexibility, offering precise edit controls.

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.
- Video editing support: Support for video compression.
- 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. Some of the benefits of this application include:

- Security Enhancement: The product will bolster the security of third-party web applications by offering a secure environment for photo editing. This will reduce the likelihood of data breaches, ensuring the confidentiality and integrity of sensitive information.
- Improved Workflow Efficiency: By providing a user-friendly and efficient photo editing solution, it will streamline the editing process for users, thereby improving their productivity.
- Cost Reduction: The application can help reduce costs associated with outsourcing photo editing tasks to third-party services, making it a cost-effective solution.
- Enhanced User Experience: Offering a seamless and integrated photo editing experience will enhance the overall user experience, increasing user satisfaction and retention.

2. General Description

The Photo Editor project has been in operation, and we are currently in the process of enhancing its functionalities, addressing existing issues, and introducing new features. Our primary goal is to elevate this existing tool, making it even more user-friendly and feature-rich.

This project effectively bridges the gap between basic photo editing tools and advanced image editing software, offering a comprehensive set of features within a simplified interface. Our target audience remains broad, catering to individuals, hobbyists, amateur photographers, professionals, students, and businesses of all sizes.

2.1 Product Functions

The main functions that will be added to the existing product include:

- Filter Effects: Allow users to add various filters like sepia, grayscale, vintage, etc., to enhance image aesthetics.
- Red-Eye Removal: Automated tool to detect and correct red eyes caused by flash photography.
- Text on Photos: Provide tools for adding, editing, and stylizing text over images.
- Background Blur: Introduce depth-of-field effects, enabling users to blur the background while keeping the subject in sharp focus.

- Batch Processing: Allow users to select multiple photos and apply the same filter or effect to all of them simultaneously.
- Sharpness and Saturation: Allow users to adjust the sharpness and saturation of image in addition to adjusting the brightness.

2.2 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.

2.3 General Constraints

1. We will be working under certain constraints while improving the existing photo editor web application. The application is based on React and Python, which dictated the development environment and technologies we could use. We needed to ensure compatibility with the existing codebase, and any new features or changes had to seamlessly integrate with the current software architecture. This constraint guided our development process and helped us prioritize enhancements while maintaining compatibility with the existing product.
2. The intended hosting environment for deployment is the University at Buffalo internal Kubernetes cluster.

2.4 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 maintain an easy and user-friendly interface that allows seamless navigation between different available options.
2. Users should be able to upload, view, and edit both photos and videos on the website, utilizing intuitive tools for editing and enhancing their multimedia content.
3. The website should offer a wide range of editing options, including but not limited to:
    - Photo editing: resizing, format conversion, color adjustments, cropping, color correction, country specific passport requirements.
    - Video editing: compression, trimming, format conversion, and basic editing features.
    - Collage creation: Enhance template designs for creating visually appealing collages.
    - Passport photo creation tool: country specific passport requirements.

4. Users' privacy and data security should be a top priority. Robust measures should be in place to safeguard users' photos and videos, including encryption, secure storage, and clear privacy policies.
5. Users should have the option to download their edited images and videos in a variety of formats, including jpg, png, jpeg for images and popular video formats like mp4, mov, etc. The download process should be user-friendly.
6. Ensure that the edited images and videos are of high quality with minimal pixel reduction or loss of quality during the editing process.
7. Optimize website performance to ensure quick loading and smooth operation, even when handling complex or large multimedia files. Address and fix any existing bugs to enhance the overall user experience.
8. The website should be accessible to users on both mobile and web browsers. It should be responsive, adapting to different screen sizes and orientations for a consistent user experience across devices.

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 University at Buffalo’s internal Kubernetes cluster 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 existing Photo editing application is a Single Page Application (SPA) built by using React and Python as tech-stacks.
2. This SPA has several cards with features such as resize, crop, and image conversion, a new card will be added specifically related to video editing.
3. The passport-photo functionality interface will be enhanced to improve user experience.
4. The existing template designs in collage will be redesigned to meet the industry standards.
5. The drag option within an image will be improved.
6. Upon selection, the component related to the selected feature will be loaded. Allowing users to use the feature he/she selected.

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.

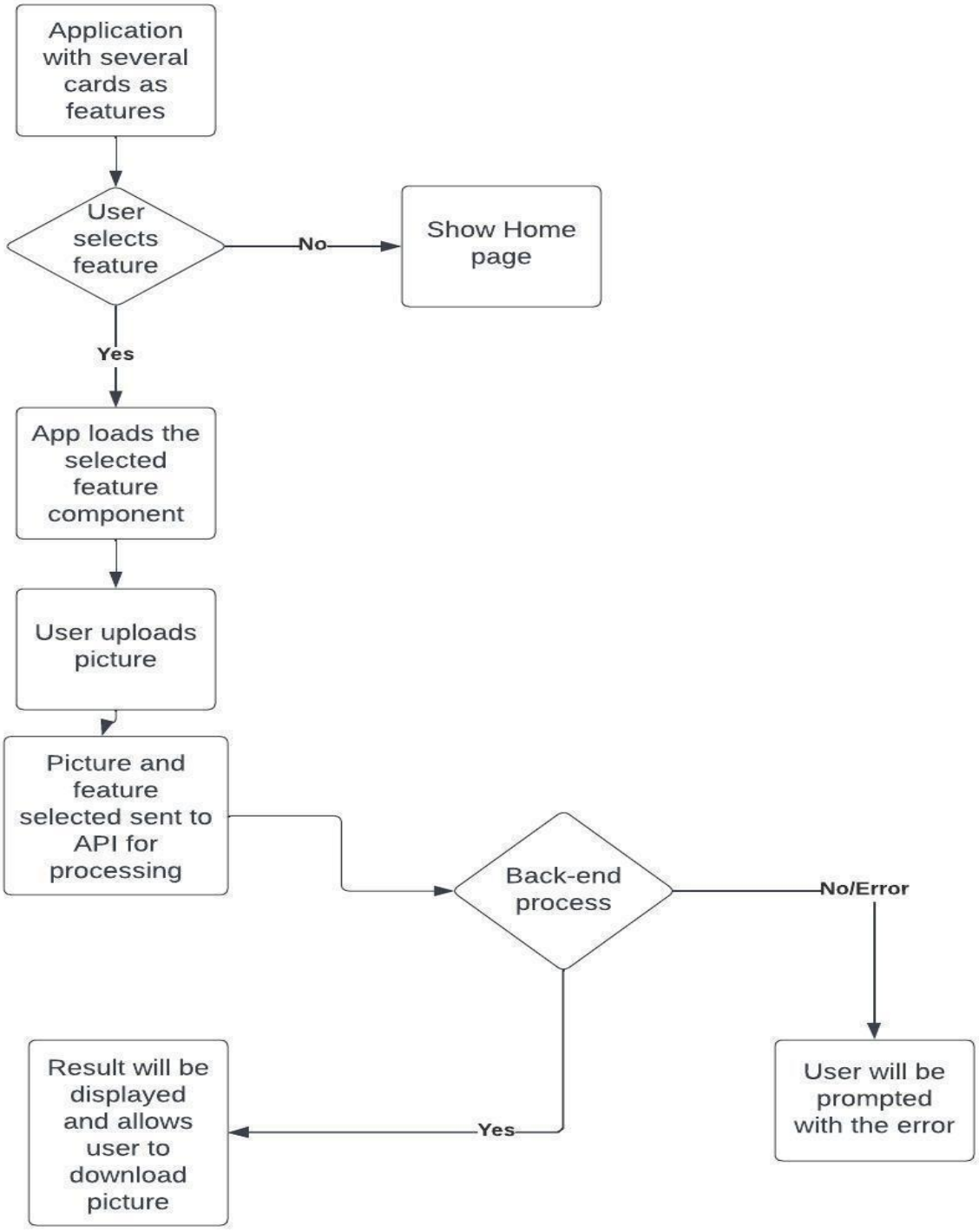
5. Glossary

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 (Existing):



Backend WorkFlow (Existing) :