(1) Program / Project Title

Program Title – ***FILTER.IO: PHOTO FILTERING***

(2) Program/Project Proponent

Project Manager – Miguel N. Tolentino

Members with Designation:
Project Designer - Miguel N. Tolentino, Tashiana C. Bandong, Bernard F. Putis
Developer - Miguel N. Tolentino, Tashiana C. Bandong, Jaymart M. Reario
System Analyst - Cyrel P. Digang, Jella Mariz A. Pintor
Technical Writer - Mica E. Francisco, Cyrel P. Digang, Jella Pintor

(3) Program/Project Co-proponent and Research Assistant/s

Ms. Angie Payne MSIT, MCP

(4) Program/Project Proponent's Department/College/Office

College of Computer and Information Sciences

(5) Background and Significance

According to the research of Bakhshi et al. (2021), photography, the use of different visual effects and filters, and its share on social platforms have dramatically risen in popularity in the past years. Some of the evident examples of these include the over 150 million photos uploaded in Instagram's first year of launching, which has now reached 60 million photo uploads a day on average. And it is said that part of the success of these is attributed to the use of visual effects and filters.

Photo Filtering is defined as the process of changing the appearance of an image by altering the colors of the pixels without changing their positions (Stirb, 2015). The manipulation of the different properties of an image such as its colors, saturation, light exposure, etc., results in different filters. And is used with the objective of enhancing an image. The research of Bakhshi et al. (2021) about "Why We Filter Our Photos and How It Impacts Engagement," shows that filtered photos are 21% more likely to be viewed and 45% likely to be commented on by the users of platforms where photo sharing occurs.

Due to the rise of various platforms where many people upload their photos and want to further enhance these photos before doing so, the group created a software that filters photos that can run on Windows and Linux with minimal system requirements, which makes it accessible for anyone. FILTER.IO is a graphical user interface image processing software that will focus on processing an image input through a user-provided path using various filters but only limited to: Blur, Grayscale, Reflect, Contour, Emboss, Sharpen, Smooth, Sepia, and Blue Filters using the Python Imaging Library (PIL). One of the strengths of this software is its ability to use various filters at the same time and use the same filter repeatedly in one run.

(6) Aims / Objectives / Hypotheses

To provide photo filtering software that operates on both Windows and Linux operating systems, with minimal system requirements. The software is designed with a user-friendly GUI, simplifying its utilization, and enhancing the user experience. With a primary function to enable users to apply filters to any image they desire to modify and improve.

(7) Materials and Methods

A. *Study Design* --Not Applicable

- Describe the type of study, the source of participants, datasets or collections to be accessed.
- Describe the sample size, sample size calculation or justification of numbers, outcome measures used.
- Provide details of the linkage and analysis variables used and why they are required and what study comparisons are being made.
- Provide an analysis plan of how the aims will be met, the statistical methods to be used and who will be carrying out the analysis.

Suggested sub-headings:

- Type of study
- Data sources/Collection
- Population/Sample size
- Expected duration of study and start times
- Statistical analyses

B. *Study Population* --Not Applicable

(8) Safety and Monitoring Plan (if applicable)

Describe any provision for monitoring the data for safety. --Not Applicable

(9) Limitations

The current version has nine exclusive image filters. Thus, the program will not be able to process other filters that are not included in the program, but which can be added in future updates. In addition, image processing is limited to one image at a time. But the user now has the capability to change the image being edited in real-time, without the necessity of closing the program, should they desire to switch the image they are working on during the editing process. The software works with JPEG, IMG, and PNG image formats; however, it does not work on palette images.

(10) Ethical Considerations

A. Informed Consent (Applies to studies using human subjects) --Not Applicable

B. Risks and Side Effects (Applies to studies using human subjects) --Not Applicable

C. Benefits to Subjects (Applies to studies using human subjects) --Not Applicable

D. Costs to Subject (Applies to studies using human subjects) --Not Applicable

E. Compensation to Subject (Applies to studies using human subjects) --Not Applicable

F. Provisions for vulnerable subjects (Applies to studies using human subjects) --Not Applicable

G. Subject Privacy and Data Confidentiality (Applies to studies using human subjects)

--Not Applicable

(11) Plan for Dissemination of Findings

The presentation of created software program will be presented as part of compliance for the final project. This would include the presentation and discussion of the source code, executable file, state diagram, system requirements, and pseudocode.

(12) References

Bakhshi, S., Shamma, D., Kennedy, L., & Gilbert, E. (2021). Why We Filter Our Photos and How It Impacts Engagement. *Proceedings of the International AAAI Conference on Web and Social Media*, 9(1), 12–21. https://doi.org/10.1609/icwsm.v9i1.14622

Stirb, I. (2015). Highlight image filter significantly improves optical character recognition on text images☆. *Emerging Trends in Image Processing, Computer Vision and Pattern Recognition*, 131–147. https://doi.org/10.1016/b978-0-12-802045-6.00009-0

(13) Appendices

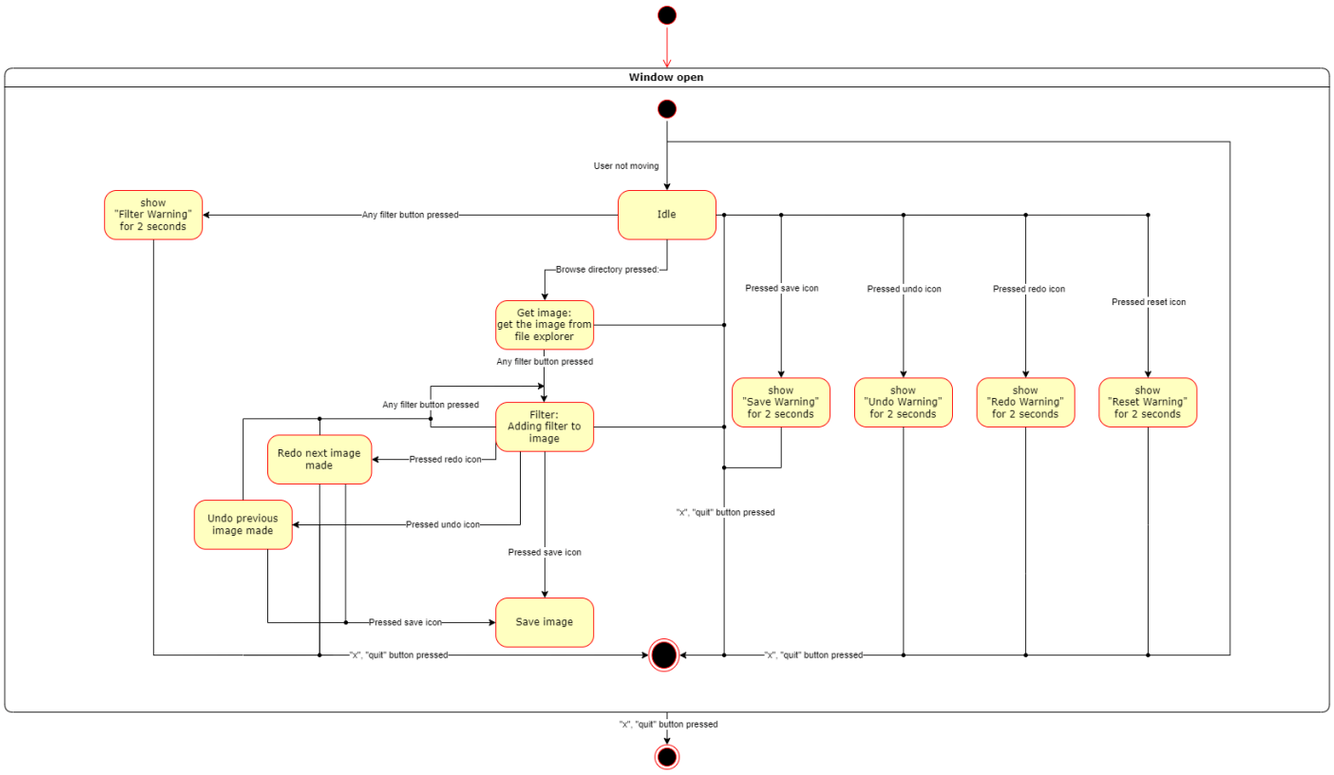
Source Code: /attached on a separate file or click this link. /

User Manual
FILTER.IO: Photo Filtering

1. To choose a picture you want to filter, click the "Browse Directory" button.
   - Navigate to the folder where the picture you want to filter is located.
   - Select the picture.
   - Then, click "Open."
2. On the right side, you can click the filter you want to add.
   - The current filtered photo will appear in the center.
   - The filter previously added to the photo will appear on the left.
3. To revert to the previous filtered photo, click the "Undo" button.
   - This will replace the current filtered photo in the center.
4. Click the "Redo" button to restore actions that were undone using "Undo.
   - The restored filtered photo will replace the current filtered photo in the center.
5. To remove all filters and return to the original image, click the "Reset" button.
6. When you are finished, click the "Save" button to save the filtered photo.
   - Navigate to the folder where you want to save the filtered photo.
   - Choose between .png or .jpg.
   - Type a file name.
   - Then, click "Save."
7. To exit the program, click the "Quit" button.

Minimum System Requirements
Operating System – Windows or Linux
Processor - 640 MHz clock speed (Intel Atom D2550)
RAM – 1 GB
Display Resolution - 1280 x 720 pixels
Hard-Disk Space – at least 50 MB

Conceptual Model



Specification Model

```
ALGORITHM finals

    import the needed module

    START main

        WHILE "quit" button is not pressed OR "x" button is not pressed

            IF any filter button is clicked without an image

                DISPLAY error message

            END IF

            IF redo, save, undo icons are clicked without an image

                DISPLAY error message

            END IF

            IF "Browse Directory" button clicked

                OPEN file explorer

                IF an image file is SELECTED

                    DISPLAY image to window

                    IF any filter button is clicked

                        add filter

                    END IF

                    IF save icon is clicked

                        save image

                    END IF

                    IF redo icon is clicked AND there is a previous version of the image

                        redo previous version of the image

                    END IF
```

ELSE

DISPLAY error message

END IF

IF undo icon is clicked AND there is a previous version of the image

undo previous version of the image

END IF

ELSE

DISPLAY error message

END IF

END IF

ELSE

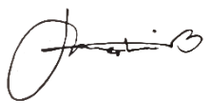
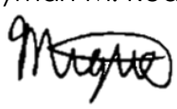
DISPLAY error message

END IF

END WHILE

END main

END finals

Signature	(14) Prepared by	(15) Endorsed by
Name of proponent	 Tashiana Mae C. Bandong  Cyrel P. Digang  Mica Mae E. Francisco  Jella Mariz A. Pintor  Bernard F. Putis  Jaymart M. Rearío  Miguel N. Tolentino	Ms. Angie Payne, MSIT, MCP
Designation/Position	Student	*(Immediate Supervisor)*
Date	02/18/2023	