SAM | FEUP

Daniel da Silva Gonçalves (up201809384)
Mário Sousa (up201806363)

AudioCanary

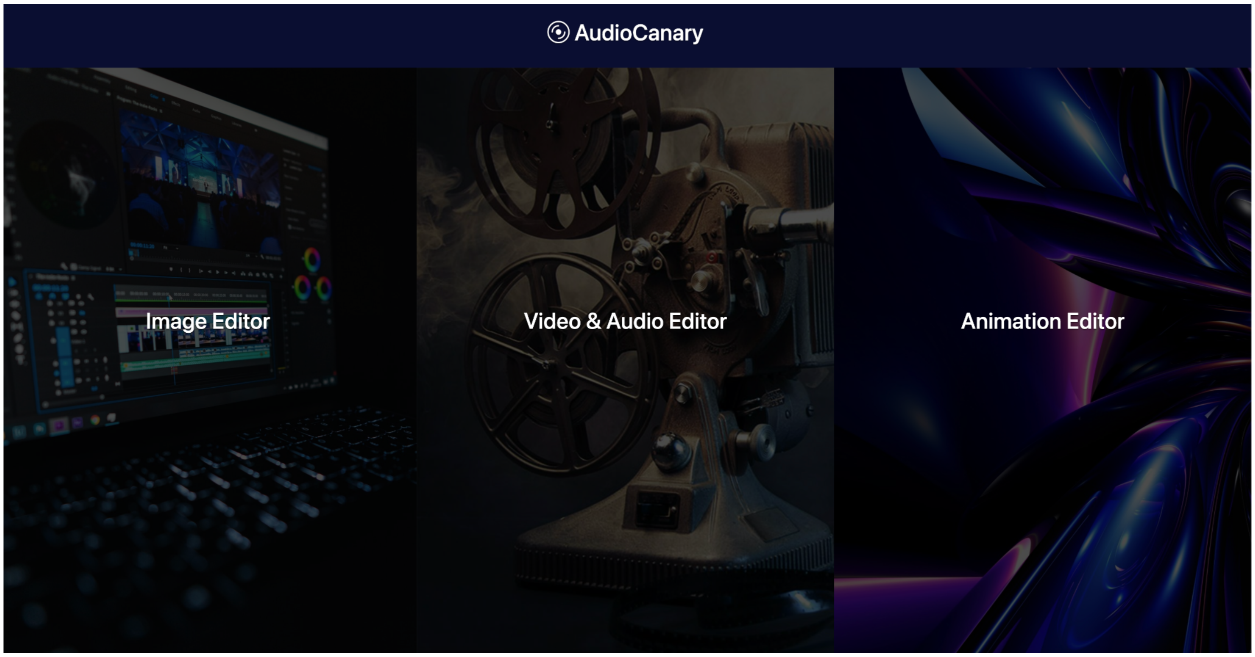
Wednesday - 26th June, 2022

Table of Contents

Product Overview

Our product is a web application that allows the user to edit images, videos and short animations they upload and modify the result so they may download it after they have set up the settings that best fits their desires and needs.

In the Video section it is also possible to extract and modify the audio itself.



[1]

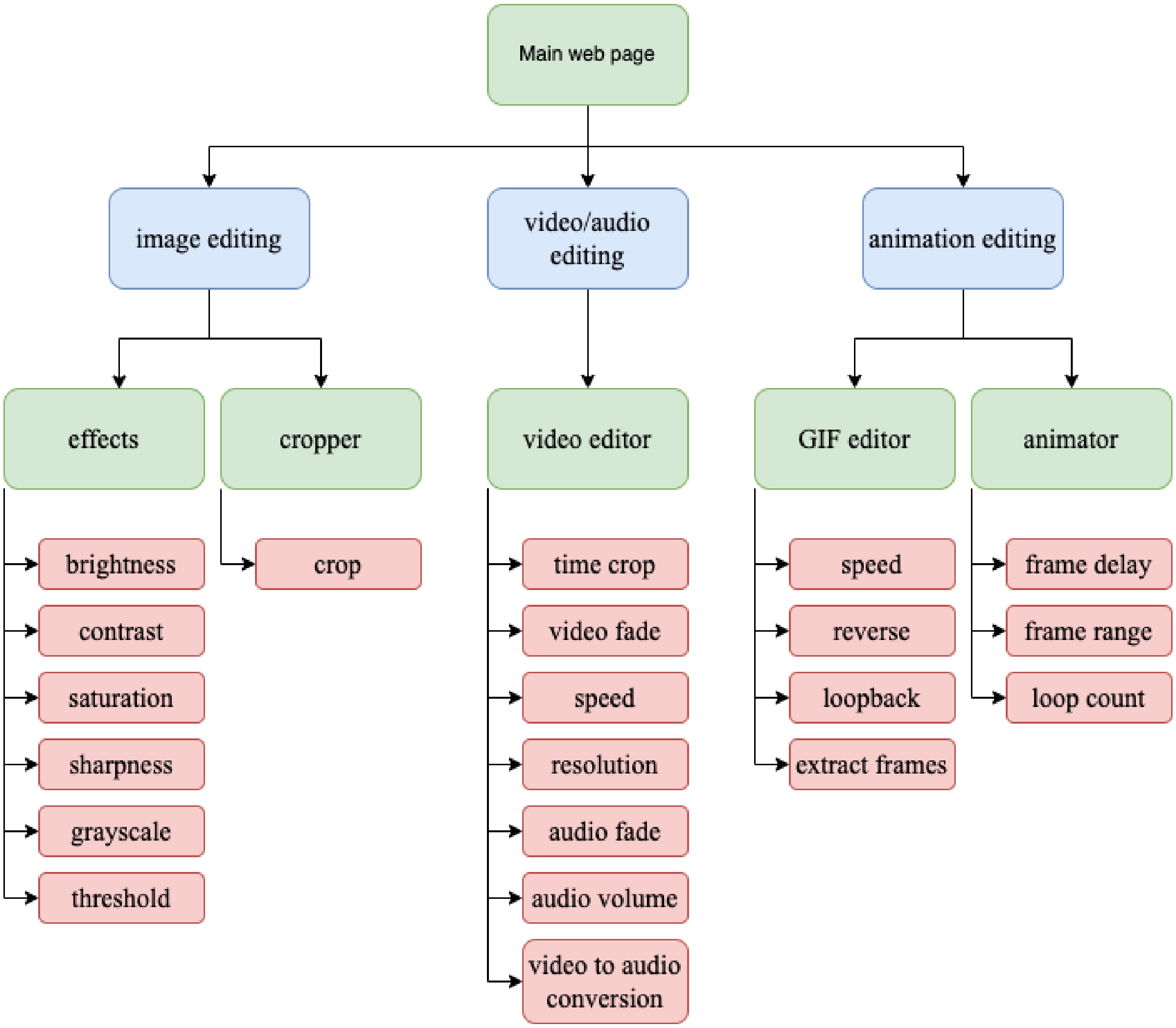
Technologies used

AudioCanary is a web application written in Python using the FLASK microframework. The frontend is based on HTML, CSS and Javascript. Most of the operations are executed with Python resorting to specific libraries for each of the types of media that are supported: images & animations (pillow), video & audio (moviepy). Image edition is an exception where we use CamanJS.

[1] AudioCanary main web page

3

Sitemap



2

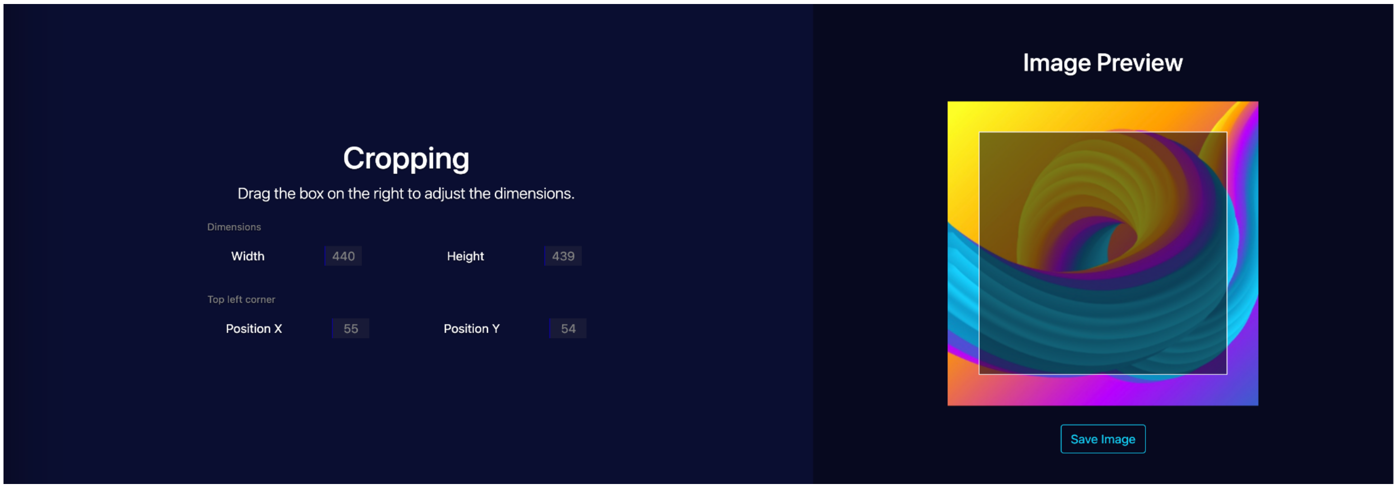
[2] AudioCanary sitemap: green for web pages; blue for services; red for the operations offered

Image editor

Image Cropping

The Image Editor is broken down to 2 web pages: Cropper and Effects.

The cropper is a page that allows the user to cut the image in a rectangular shape by moving and shaping the darker window using the mouse, providing a versatile and real-time visual of the output.



Cropping

Drag the box on the right to adjust the dimensions.

Dimensions

Width 440 Height 439

Top left corner

Position X 55 Position Y 54

Image Preview

[3]

In this page, four fields are available (but disabled):

- **Width** - The width of the cropped dimension.
- **Height** - The height of the cropped dimension.
- **Position X** - The horizontal position of the top left corner.
- **Position Y** - The vertical position of the top left corner.

These values can only be changed by moving the shaded window on the right, which will define the dimensions and position of the cropped section.

[3] Cropper web page with an image uploaded

Image Editing

Image editing options (brightness adjustment, contrast adjustment, saturation adjustment, sharpness adjustment, grayscale, threshold) are done in another page by adjusting sliders or clicking on the corresponding switches.

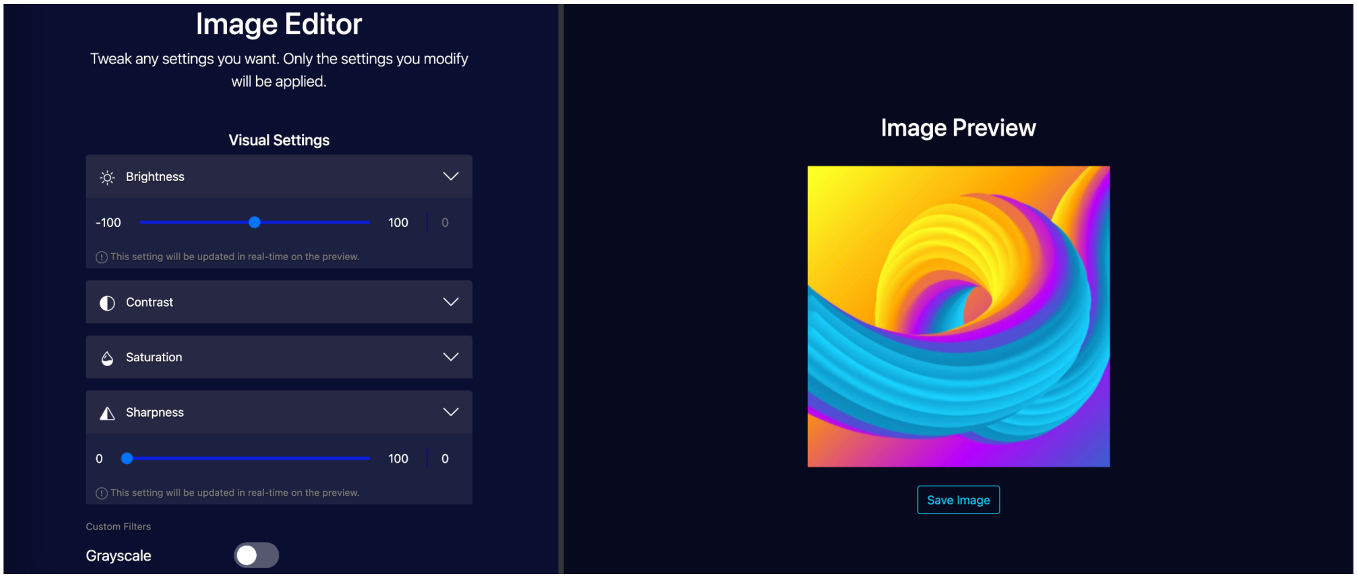


Image Editor

Tweak any settings you want. Only the settings you modify will be applied.

Visual Settings

Brightness

-100 100 0

ⓘ This setting will be updated in real-time on the preview.

Contrast

Saturation

Sharpness

0 100 0

ⓘ This setting will be updated in real-time on the preview.

Custom Filters

Grayscale

Image Preview

[4]

In this page, the options offered are as follows:

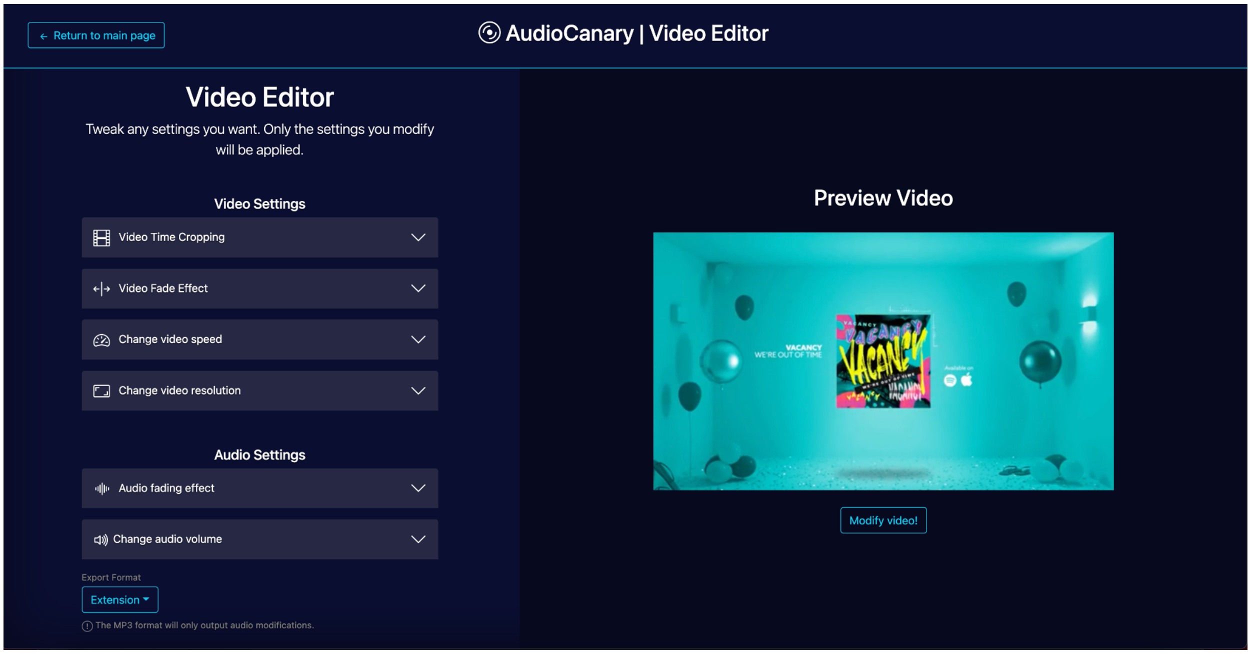
- **Brightness** - the brightness of the image;
- **Contrast** - the contrast of the image;
- **Saturation** - the saturation of the image;
- **Sharpness** - increases the sharpness of the image;
- **Grayscale** - each pixel of the image only represents the color intensity, becoming monochromatic;
- **Threshold** - thresholds the image (it rounds the intensity values to the extremes based on the threshold value)

[4] Image Editor/Effects web page with an image uploaded, showcasing some of the settings open

Audio & Video editor

Since videos are made of visual and auditory components, both the video editor and audio editor share the same page. The page allows the upload of both types of files and some of the operations to be used interchangeably. For example, video speed can be used to speed up the audio.

The operations of the visual part of a video file implemented are time cropping, fade effect (both at beginning and at the end), speed and resolution (can only be reduced). Additionally, the audio fading and change of volume can be applied to the audio component. Lastly, the audio & video editor allows the user to convert their file between mp3, mp4 and mov formats (conversion from mp3 to the other formats can't be applied).



AudioCanary | Video Editor

Video Editor

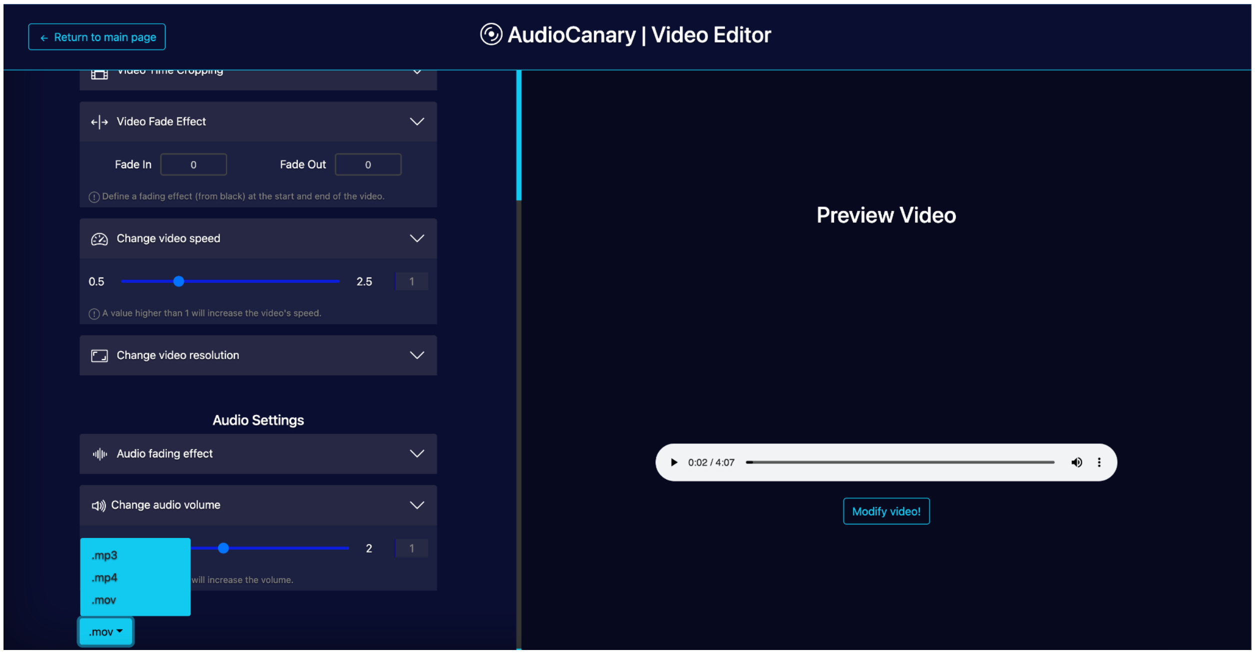
Tweak any settings you want. Only the settings you modify will be applied.

Export Format

The MP3 format will only output audio modifications.

[5]

[5] Video & Audio editor web page with a video uploaded



Fade In 0 Fade Out 0

Define a fading effect (from black) at the start and end of the video.

0.5 2.5 1

A value higher than 1 will increase the video's speed.

2 1

will increase the volume.

0:02 / 4:07

[6]

In this page, the options offered are as follows:

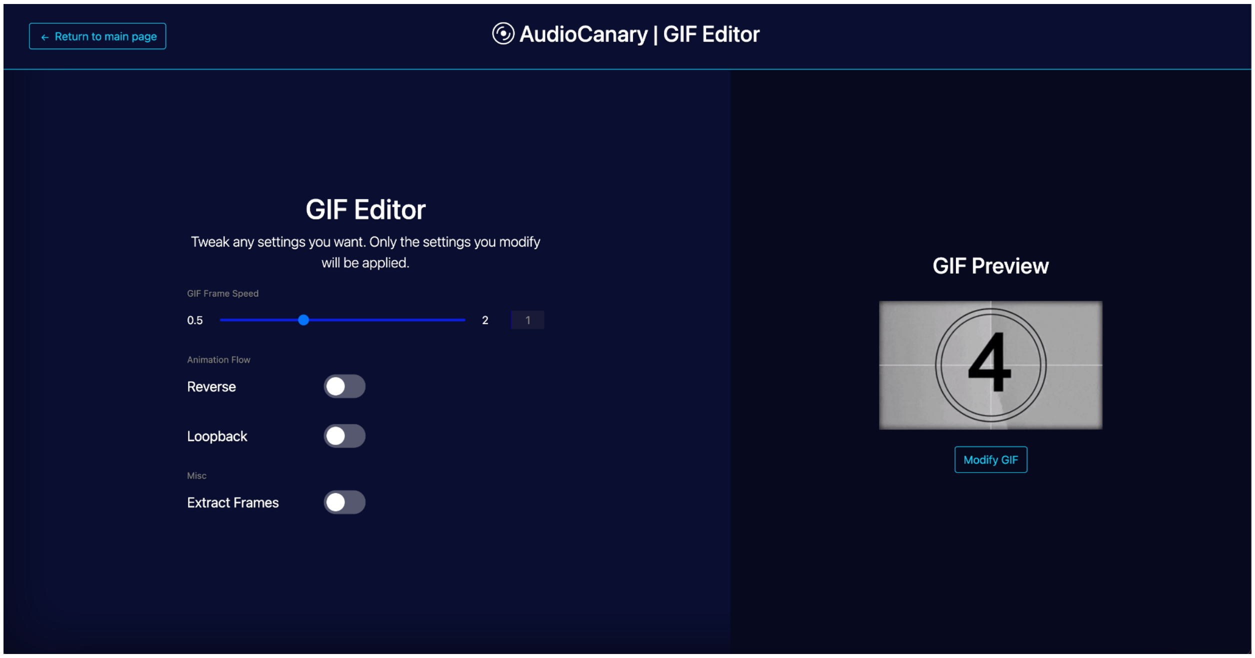
- **Video time Cropping** - cuts the video, returning one in the interval asked (can be also applied to sound)
- **Video fade effect** - adds fading in the beginning x seconds and/or last y seconds of the visual component (x and y are values input by the user)
- **Change video speed** - changes the speed at which the video is played (can be also applied to sound)
- **Change video resolution** - reduces the video resolution
- **Audio fading effect** - adds fading in the beginning x seconds and/or last y seconds of the audio component
- **Change audio volume** - changes the audio intensity
- **Download format (not labeled)** - changes the format of the file returned after the changes

[6] Video & Audio editor with audio file (mp3) uploaded, some settings and the selector of the download file open

Animation editor

The animation editor is separated into two parts: one that lets the user modify a GIF file they already have (GIF editor) and another that allows the modification of an animation (animator).

The GIF editor allows the user to set the GIF frame speed (by changing the duration of each frame), to play the GIF in reverse and to set a loopback (after the GIF ends, it plays in reverse). If the user wants to obtain the frames of the file, "extract frames" converts the GIF into multiple images.



AudioCanary | GIF Editor

GIF Editor

Tweak any settings you want. Only the settings you modify will be applied.

GIF Frame Speed: 0.5 — 2, 1

Animation Flow

Reverse ○

Loopback ○

Misc

Extract Frames ○

GIF Preview

[7]

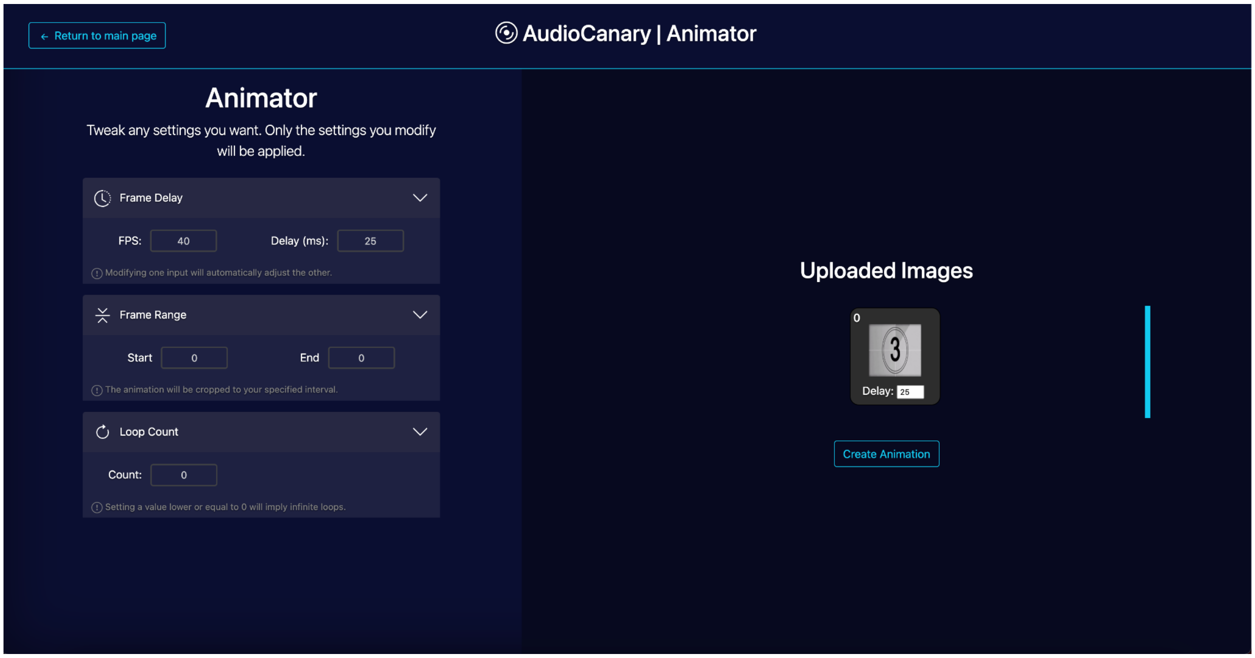
In this page, the options offered are as follows:

- **GIF frame speed** - how quickly each frame passes
- **Reverse** - GIF plays out in reverse
- **Loopback** - GIF plays normally and then in reverse every cycle

[7] GIF Editor web page displaying an uploaded and unedited GIF

- **Extract frames** - converts the GIF in a collection of images

The Animator allows the user to create an animation by changing the replay speed via frame delay, length/duration through the frame range and how many cycles constitute the animation, being the default infinite (through the “loop count value” equal to 0).



Animator

Tweak any settings you want. Only the settings you modify will be applied.

Frame Delay

FPS: 40 Delay (ms): 25

Modifying one input will automatically adjust the other.

Frame Range

Start 0 End 0

The animation will be cropped to your specified interval.

Loop Count

Count: 0

Setting a value lower or equal to 0 will imply infinite loops.

Delay: 25

[8]

In this page, the options offered are as follows:

- **Frame delay** - change either the number of frames per second or how long does each frame last for
- **Frame range** - change the number of frames with which the user wants the animation to be made (in case they add too many frames)
- **Loop count** - change the number of times the animation plays itself when viewed (for 0 or below it loops indefinitely)

[8] Animation editor web page displaying an uploaded animation

Details

This application was made with the intent of offering simple editing tools for different types of digital media and making them intuitive for a wide range of potential users. Resorting to python scripts and some of the many diverse libraries available in that programming language, the web application allows the users to make some of the modifications they want in the images, videos, audio files and animations by just adjusting some values that are displayed before them.

How to Set-Up

The set-up process is quite straightforward. Please read the README.md file in the main directory of the Project Folder for installation instructions.

Conclusion

The application managed to function in a reliable and intuitive way, however, there were some limitations on how efficient the operations would be and on what kind of operations could be done. The efficiency, although quick for small and medium sized files, drops significantly with larger files, which is something that should be improved in the near future.

Contributions

35% - Mário Sousa

Developed the final report, added audio-to-video editor and GIF editor. Fixed navigation in some pages and some operations in the image editor.

65% - Daniel Gonçalves

Implemented the web app (visualization and interaction),did the research of the tools, the vision, the prototype. Implemented image editor, cropper, video editor (helped in fixing audio), animator. Implemented the routing.