# Features

## Similar applications to draw inspirations from

* <https://www.chartmymusic.com> supports picture to collage
* [https://apwhite.dev/spotify/collage/](https://apwhite.dev/spotify/collage/?access_token=BQCut_If650YozVV1usP9d5dwo7mAFc1O-OSJhiD2kiJweio6KRwqVFzpV9APy5kJR1N9Q18bfWfYaJhJC-qz15S8h2UkbLU3ZkbAQg-3v9dJ1f0K6ajG3rqpmwxuGVIWEkVZ-RvjCbjYyY6Gbgsn049CmPESimXVOyV6Jr1mE_5HBES6LEwi410nGi5UVeVug1AN9ITjkcFU06hpp8z&refresh_token=AQCH6WmG99zKeLXqy_P9nfHOGSbeauMsBtPdhc4dxtnwiVzwZCJrSXi2jbBFqT2XWOJghRWkZMlSmjBlS0zUGM-obWzzuLPhzHaJr04FvVZ_ewkVlqM9eZMDn8jvAaAWVxg&expires_in=3600) supports collage dimension customization
* <https://xsaardo.github.io/Album-Art-Collage-Creator/> does not support spotify playlist to collage, but support drag and drop collage customization
* <https://receiptify.herokuapp.com/index.html> displays stats for musics in the collage

## The user should at least be able to…

* Generate collage from a spotify playlist url or a youtube playlist url
* Login to spotify and generate collage from liked music / recently played music
* Download collage as png image
* Customize the size and aspect ratio of the collage
* Change the arrangement of the collage items
* Share the collage on social media platforms

## The user should preferably be able to…

* Generate collage from any collection of spotify music (search result, etc.)
* Generate interactive collage containing link to each song / album in the collage
* Listen to songs in the collage on the interactive collage
* Acquire a shareable url to the interactive collage they generated

# UI Design / User Experience

## All pages

* You can click on a home button, which will send you to the landing page
* You can click on an about button, which will send you to the about page
* All UI elements use the spotify dark theme color palette (black, white, mint green)

## Landing page

* You enter this page when you first enter our website
* You are instructed by text to enter a playlist url or login to spotify
* You can enter a playlist url in a textbox and submit it with a button. This will trigger a loading animation. If the url is valid, you will be sent to the editor page, else you will receive an error message
* You can click on a login to spotify button. This will send you to the spotify auth page

## Spotify auth page:

* To do

## Editor page

* You will see the collage in the center, which is a rectangular grid filled with square cover images of the songs in the given playlist. Duplicate covers will be discarded. If the playlist has over 100 unique covers, only the top 100 will be displayed
* You can hover your cursor over a cover and it will turn semi-transparent
* You can drag any cover around the collage. The dragged cover will turn semi-transparent, and any cover it overlaps will too. The slot it occupied will turn blank. When the dragged cover is released, if it is on top of a slot, it will swap places with the cover in that slot. Otherwise it will snap back to its original slot
* You will see a floating, semi-transparent tool tab to the left of the collage containing all the customization options
* You can use an RGB color picker to choose the background color of the collage
* You can use a textbox to adjust the spacing between the covers (which will also be the width of the borders around the covers)
* You can use a slider to change the proportions of the grid, which ranges from 1\*n to n\*1, where n is the number of covers
* You can use a slider to choose the resolution of the covers, which ranges from original resolution to 20% resolution. This will only affect the resolution of the rendered image
* You can hold down shift key to hide all UI elements except the collage itself. A text instructions tells you that you can do so
* You can click on a download button. The finished collage will be downloaded to your device after a rendering animation

## UX problems

* What if the collage has too many songs / too much spacing that it becomes too large for the screen? Do we shrink the collage to accommodate the screen?
* What if the covers cannot fill the grid? (e.g. 24 covers in a 5x5 grid) Do we leave the last few slots empty, or mess with the spacing to try to make the collage appear rectangular?
* Should the finished collage contain the name of the playlist and / or the name and pfp of the user?
* Should we split the editor page into an editor and a share page? The share page will allow the user to adjust render size, collage title, and download collage / directly share collage / get embed of collage

# Implementation notes

To render and display 3d objects, we will use three.js and react three fiber

* [Three.js documentation](https://threejs.org/docs/index.html#manual/en/introduction) and [Fiber documentation](https://docs.pmnd.rs/react-three-fiber) can be found here
* Fiber is a declarative wrapper of three.js designed to be used with React