Spark AR: Santa Filter!

Amanda Kwong
amanda.kwong001@umb.edu
University of Massachusetts Boston

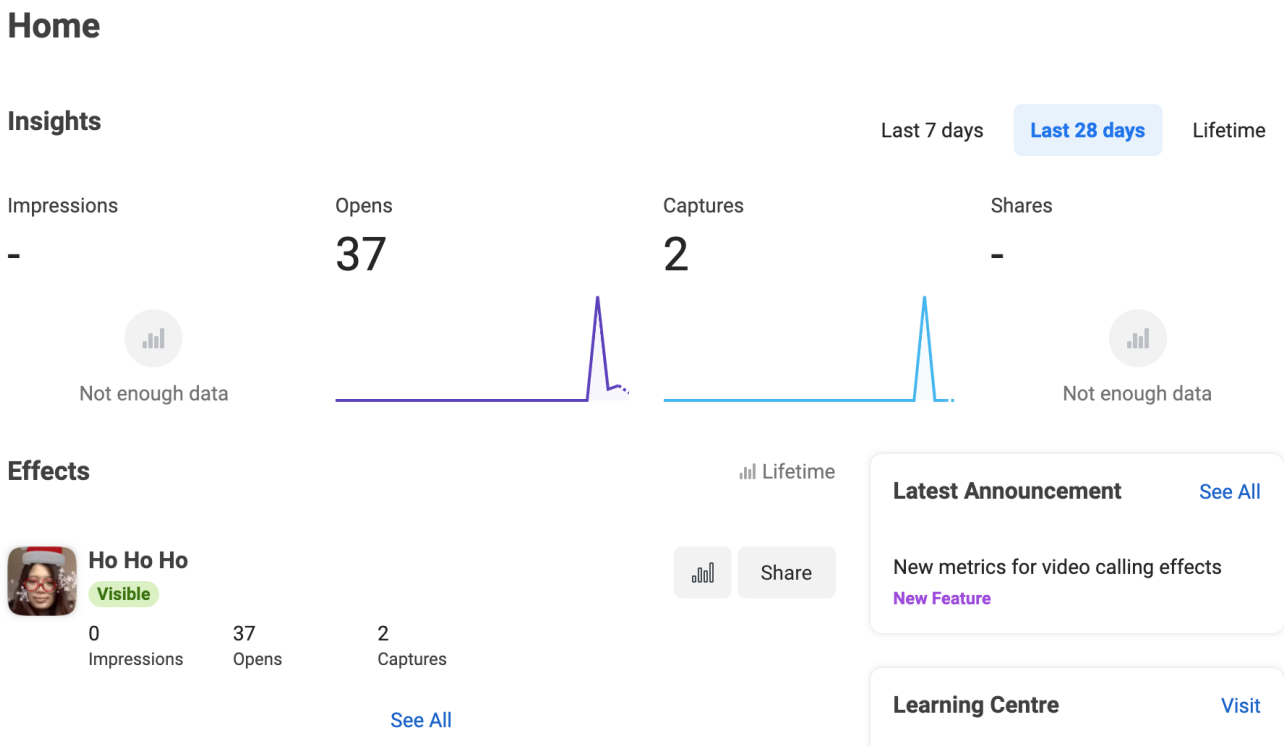


Figure 1: My accepted, published Instagram filter shown on Spark AR Hub!

ABSTRACT

I decided to create an Instagram filter using Spark AR for my final project. Filters can change the overall appearance of your photos and posts. Face filters in particular use augmented reality effects that you can layer on your photos. For my final project, I designed a holiday filter to get into the festive spirit. I imported a santa hat, red glasses, and snowflakes as assets in the scene. I published my design to Instagram, and users are able to use my public filter for any single detected face!

KEYWORDS

Spark AR, Augmented Reality Effects, Patch Editor, Assets

CS460, Fall 2021, Boston, MA

ACM ISBN 1337.
https://CS460.org

ACM Reference Format:
Amanda Kwong. 2021. Spark AR: Santa Filter!. In *CS460: Computer Graphics at UMass Boston, Fall 2021.* Boston, MA, USA, 3 pages. https://CS460.org

1 INTRODUCTION

Spark AR is an augmented reality software that is used to create Instagram filters. There are pre-made templates to help you get started, or you can start from scratch. Other features of Spark AR include asset libraries, advanced customization and controls, and scripting. There is also a patch editor to add interaction, animation, and logic to effects. This project is a direct contribution to the large group of Spark AR developers and designers within the Instagram and Meta community, and is something I am proud to have played a part in!

2 RELATED WORK

Existing related works I took inspiration include a video walking us through how to make an Instagram filter [1] and an article describing how to use render passes for the layering of objects [2].

3 METHOD

I was interested in creating an Instagram filter because of how popular they are on social media. There are so many creative designs out there, and Spark AR's versatility can help make them become a reality.

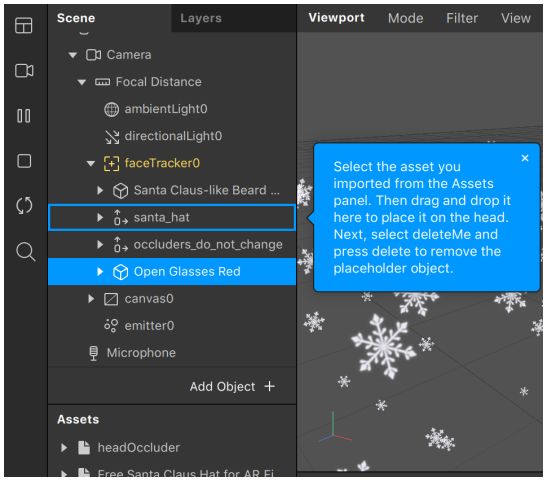
The first step I did was play around with the actual user interface of the software. It was something I was not familiar with, and because of the overwhelming amount of features and tools integrated into it, I found many tutorials and articles online to be especially useful.

Next, I decided on an idea for my filter. Since I love using face filters, and the holidays are just around the corner, I chose to do a Christmas themed filter. I figured out which assets I wanted to import, and how to render them onto the scene.

There is an option to code specific animations in either Javascript or Typescript, but I could not find any resources to guide me through this process. So, I used the patch editor, which was just as efficient and more commonly used!

3.1 Implementation

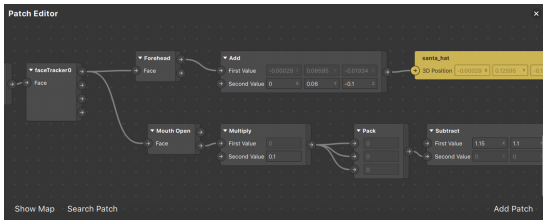
I implemented the project using Spark AR. I was able to test my filter with my own face and with avatars so I could easily see if the effect was compatible with various facial features. There are 3 main panels - assets (add 3D objects and 2D textures to your filter), layers (to render an element on top of the other), and scene (where everything is shown). I imported the santa hat and red glasses as assets to the scene, and added a face tracker with a face mesh to connect them together:



For the snowflakes, I found a fractal image from the Spark AR library, and set that as a material for the particle system. I played around with the different variables (emitter, radius, spray angle, acceleration, etc.) to simulate snow falling.

I used different layers for the user and the background, as I wanted them to be rendered separately. This makes the snowflakes appear in the background and in front of the user's face, but it won't go "through" their face like the other objects do.

I found the patch editor to be incredibly useful for adding logic to your filter, and also for debugging purposes. I added the materials I used for the patch editor and tracked the positions. In case I ran into any errors, I could easily see if there was something going on in the patch editor:



3.2 Milestones

I structured the development in a rather non-traditional way. Rather than brainstorming design ideas first, I wanted to make sure my ideas would actually be achievable by first learning the basics of Spark AR. The rest of my process included creating the filter and troubleshooting any problems that arose with it.

3.2.1 Milestone 1. I looked at resources to help me navigate the Spark AR platform and familiarize myself with all its features. To get more practice with Spark AR, I created a "test" filter that I would later integrate into my final product.

3.2.2 Milestone 2. I came up with a design idea that I would enjoy completing and that seemed feasible given my experience and time frame.

3.2.3 Milestone 3. The next main milestone was to implement my ideas - I started off with the facial accessories (santa hat and red glasses), and then I created the falling snowflakes/fractals in the background of the filter.

3.2.4 Milestone 4. I spent a lot of time with an issue with regard to the overlap of the background assets and the user assets. I was able to successfully solve this by creating separate layers to provide a "shield" between the face and the background.

3.2.5 Milestone 5. After testing out my filter on different facial features (such as my own face and with various avatars), I submitted my design to Instagram and was able to successfully publish it for everyone to use!

3.3 Challenges

A few challenges I faced included:

- Challenge 1: I found that the more objects I added into the scene, the easier it was to lose track of which objects should be rendered on top of the other.
- Challenge 2: I wanted to include an animation sequence to simulate different objects each time the user taps the screen, but I wasn't able to do that without messing up the objects I had already added.
- Challenge 3: Finally, publishing my effect took some time to complete, as I had to make sure my filter was compatible with all platforms and devices.

4 RESULTS

I am really proud of my final result, and of the fact that I was able to get my filter published to Instagram. The effect has a 3D santa hat

and glasses objects that the user can wear, with snowflakes falling all around the user. The image below shows a demo of my filter:

5 CONCLUSIONS

This was such a fun final project! I got to learn how to make my first Instagram filter, and I will definitely apply my knowledge to future effects that I make.

One thing I will keep in mind for the future is that the more complex your filter is, the more problems you will run into (layering problems, not rendering properly, etc.). I found that creating my filter in increments is the best way to avoid trivial errors that will compromise the overall look of the filter.

This computer graphics class prepared me immensely for understanding the different parts that come into play when creating a graphic such as a filter (lighting, positions, etc.). This has truly been a wonderful semester!

REFERENCES

[1] Estefannie G. 2019. MAKE YOUR OWN INSTAGRAM FILTER IN 10 MINUTES // LEARN SOMETHING. *URL: https://www.youtube.com/watch?v=LDbmH8pyjjY* (2019).

[2] GOWAAA. 2020. Spark AR Render Pass For Beginners Part 2. *URL: https://www.gowaaa.com/post/spark-ar-render-pass-for-beginners-part-2* (2020).