

Scanimation! - Barrier Grid Animation

Abstract

The goal for this project was to develop an interactive and fun activity for students grades K-12 for use at different outreach events. “Scanimation!” is an activity that allows students to create their very own animations via the use of a grid printed on an overhead transparent and specially designed images printed on regular 8.5”x11” printer paper. The “Scanimation!” activity was designed to teach students about the technology behind the development of animation and moving pictures as well as provide an fun optical illusion that they can take home and show their friends and family.

Background

Barrier-grid animation has been around since the 1800s, but not called scanimation until it was patented in 2006 by Rufus Butler Seder. It was developed as a method of creating relatively cheap and simple way to create animated images in a printed form.

One of the most exciting parts of Scanimation is the ability of it to amaze anyone of any age. Scanimation used currently used in children’s books to entertain kids with moving pictures ranging anywhere from their favorite animals to their favorite movies. This is one of the simplest uses of the technique though. Some have also used Scanimation as a technique to recolor old movies, add 3D effects to movies, or to make stagnant pictures come to life. Scanimation! is an outreach activity that brings the magic of physics, engineering, and optical illusions to life in the hands of the participant and has endless possibilities to grow.

The inspiration for the use of Scanimation as an outreach activity comes from the a video on the website “Kids Should See This” (Source 1). The video has hundreds of thousands of views and amazed me personally when I saw it. My initial reaction was to have no idea what was going on, but to dive deeper to figure out what was happening and if it was as simple as it looked. I found out that the illusion was as simple as it looked and that made it so much better, allowing me and others to create this amazing moving picture illusion with the simple sliding of one page over another.

Materials and Methods

The Grid:

The grid is a document to be printed on overhead transparencies. The grid is a 5 mm foundation with alternating 1 mm white and 4 mm black bars, as seen in Figure 1 below. These grids can be printed on 8.5"x11" overhead transparencies. Full page grids can be accessed through Travis Walker, Skip Rochefort, or Margie Haak.

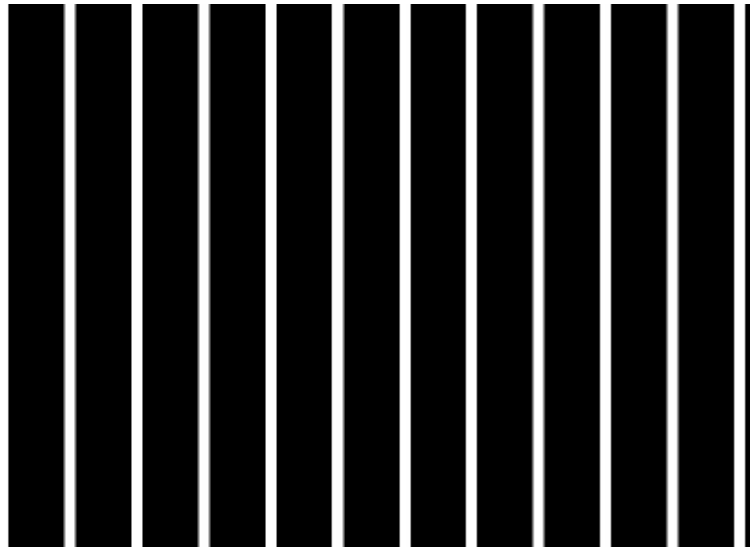


Figure 1: The spacing of the grid to be printed on overhead transparencies.

The Images:

The images that are used to create the illusion of a moving image are a series of four images that when spaces 1 mm apart allow the grid to pass over and expose a single image at a time. These images can be printed on standard 8.5x11" printer paper and paired with the grid created above to make the series of images come to life in a simple animation. More image templates can be acquired from Travis Walker, Skip Rochefort, or Margie Haak. Or more unique Scanimation images can be created using the *1337 Arts* website located in the sources. This website will allow you to create your very own Scanimation images by simply uploading a series of images like the four displayed in Figure 2 below. And the website will do the work for you and output an image like the one seen in Figure 3 that you will be able to combine with the grid to bring whatever you made to life.

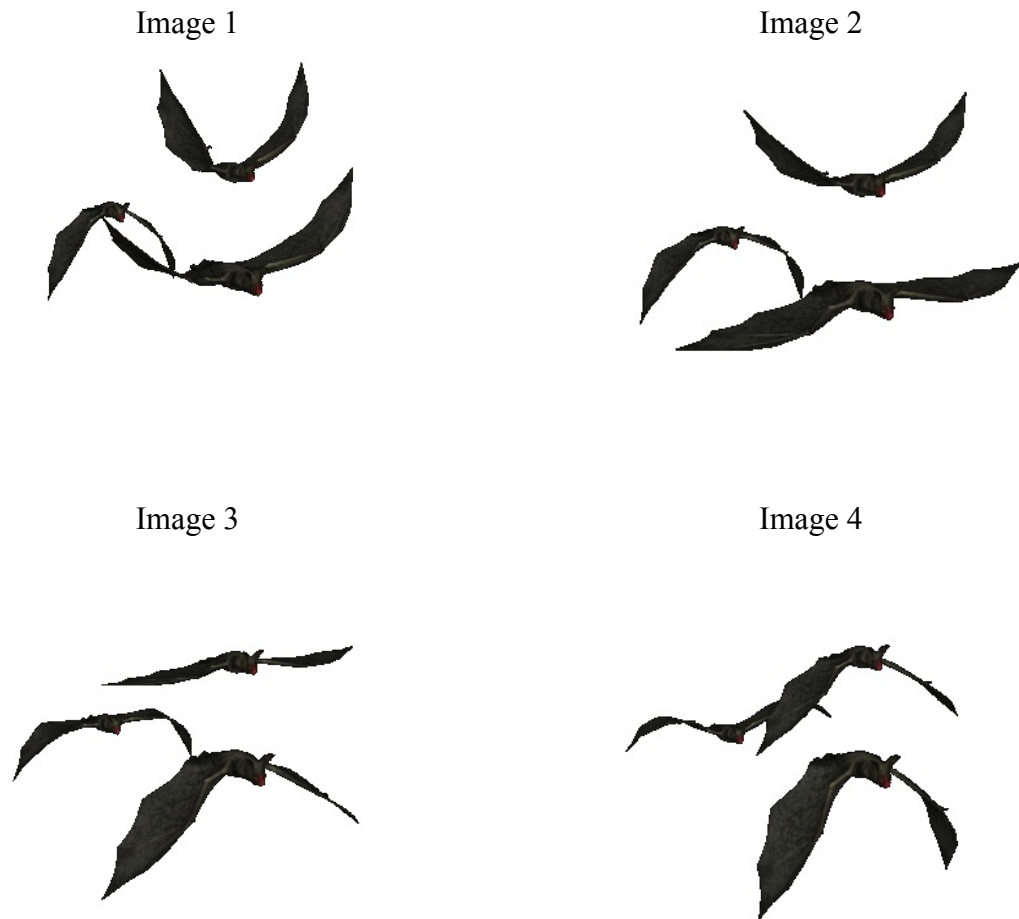


Figure 2: Four images in a series that are to be combined to create a Scanimation image

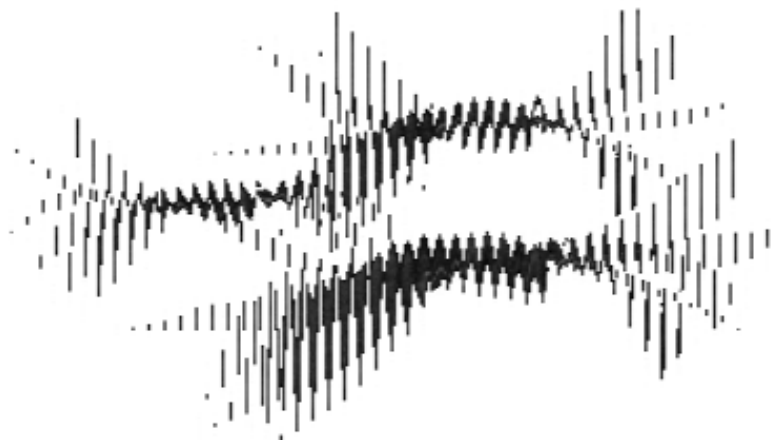


Figure 3: The Scanimation image created from the series of images in Figure 2.

Results and Discussion

The full sheet “Scanimation!” templates and the full sheet grids can be used for a fun and low cost activity for science outreach for kids. The final templates cost approximately \$1 in materials to make and approximately an hour of time. For the outreach events the full page image templates can be shrunk down and printed on $\frac{1}{4}$ of a page each and the grids can be also shrunk down to $\frac{1}{4}$ of a page and cut out. Templates can be found in Appendix B. These can be used for take-home samples for the students participating, costing approximately \$0.03 per student. This allows for a low budget interactive activity for students grade K-12 that will get them excited about the use of Barrier-Grid Animation and a form of animation.

Acknowledgements

I would like to thank Travis Walker for teaching and organizing the honors college class that gave me the opportunity to create this project. Also Skip Rochefort and Margie Haak for organizing and running all of the Family Science and Engineering Nights where I had the opportunity to test my project and got my initial inspiration for the project.

Sources

- 1) Software to create your own Scanimations: <http://1337arts.com/stripes/scanimate/>
- 2) Original concept and inspiration behind the idea:
<http://thekidshouldseethis.com/post/31459617760>
- 3) Source for most information on barrier grid animation:
https://en.wikipedia.org/wiki/Barrier_grid_animation_and_stereography