How Short Circuit Experiments

Experimental Filmmaking at Walt Disney Animation Studios

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Figure 1: Left to right: Final frames from "Jing Hua", "Zenith", and "Just a Thought" illustrating a wide variety of looks.

ABSTRACT

Short Circuit is an experimental professional development program that began in 2016 where anyone at Walt Disney Animation Studios can pitch an idea and potentially be selected to create an original experimental short film with the support of the studio. This innovative program aims to develop and train studio talent by promoting the culture of storytelling throughout Disney Animation. By design, this program highlights new voices, encourages risk taking in both visual style and story, and supports technical innovation in the filmmaking process. The program has so far given 20 Disney Animation filmmakers the opportunity to create their own short, 14 of which have made their debut on Disney+. These experimental shorts have pushed the boundaries of storytelling and art, exploring stylized looks in a condensed production period. This talk will present the history and motivation behind Short Circuit, highlight how small teams worked efficiently to explore storytelling and unique art styles and discuss how lessons from the program have impacted filmmaking at Walt Disney Animation Studios.

CCS CONCEPTS

Computing methodologies → Animation;

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KEYWORDS

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1 INTRODUCTION

Historically, animated shorts at Walt Disney Animation Studios have been a valuable platform for developing talent, creating new opportunities to a broad range of people in the studio, and experimenting with innovative and different styles of art direction and storytelling. Experiences and lessons from the production of Disney Animation's Oscar[®]-winning animated shorts, "Paperman" and "Feast" shorts led to a desire to further enhance experimental shortform filmmaking. As a result, Walt Disney Animation Studios' Short Circuit program was created to support the culture of storytelling, to provide a creative sandbox for trying different mediums and new production techniques, and to allow for members from across the studio to try their hands at new roles.

Short Circuit entries are open to anyone at the studio through a blind submission process, where projects are chosen by a panel of reviewers including directors, writers, creative development staff, story leadership, VFX and technical supervisors, and past Short Circuit directors. To encourage innovative storytelling, entrants are given wide latitude for how submission materials are formatted

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and presented, and projects are chosen purely based on the merit of their ideas, with trust that any potential challenges will be tackled during production.

2 PLATFORM FOR GROWTH

The mission of Short Circuit is to cultivate storytellers from anywhere in the studio, regardless of department or experience. The program's directors also come from many different departments including animation, modeling, look development, story, technical direction, layout, effects, lighting, and production management. The program grants its participants more exposure to different aspects of filmmaking, helping them gain a better understanding of the production pipeline and apply that knowledge in their future projects. In addition to creating new opportunities for the directors, Short Circuit encourages members of the studio to chase their passion, working with artist management to emphasize growth and potential cross-training opportunities.

In addition to creating new opportunities for the directors, the program also encourages growth throughout the studio by creating opportunities for artists to step into new roles of the pipeline, such as an animator doing visual development or storyboarding for a film. Short Circuit encourages members of the studio to chase their passion, working with artist management to emphasize growth and potential cross-training opportunities.

3 EXPERIMENTAL FILM LOOKS

Many of the Short Circuit films have experimented with a wide variety of new looks, as seen in Figure1, necessitating using existing technology in a new way. For example, filmmakers relied heavily on tools that artists were already familiar with (e.g. Nuke, Meander, RV, Photoshop), but utilized the existing tools in novel ways to achieve the desired stylized looks. Many of the shorts were animated in 3D, and had arbitrary output variables (AOV) rendered via the existing lighting and rendering pipeline. The resulting AOVs were used to drive stylized compositing in Nuke, which was then augmented with hand-drawn and hand-painted elements in Meander [?], or for simpler tasks, hand painted using our Meander-based draw over function in the review/playback tool RV.

To achieve the comic book dot effect in "Just a Thought", rendered AOVs with surface color were processed with an in-house CMYK dot-printed Nuke filter with art-directable controls to change the dot pattern / size, to preserve the hair color of characters, and to create the blush masks on the cheeks of characters' faces. Lines on objects and characters in "Just a Thought" were created in Meander, and thought bubbles were composited in Nuke. In "Jing Hua", the watercolor edge look was created by processing a combination of flat surface color renders, stylized lighting for negative space, and 2D brush stroke sprites on edges of elements. Artists put strong lights on characters and objects to create a negative space look that a watercolor artist would normally paint. In Houdini, 2D brush strokes were instanced on edges of elements based on points generated by an edge detection camera. The separate passes were then composited in Nuke, giving the artist flexibility and control over the look of the final brush stroke. On "Zenith", artists used volumetric tools in Houdini and the volume rendering system in Disney's Hyperion Renderer to create and render the celestial characters [??]. Emissive masks were used to shape the lighting on the characters. Animated geometry was then used to drive fast-moving volumes that made up the accretion disk around the black hole. Displacement maps derived from the color matte of the black hole were applied to the camera lens to produce the desired distortion effect.

4 IMPACT ON PRODUCTION WORKFLOWS

Since the shorts were produced concurrent with animated feature production timelines, crews had to think outside of the traditional production pipeline and devise new methods to achieve high quality imagery in a shorter timeframe with fewer resources. As a result, the crews created lean and flexible workflows, which have since influenced techniques used on our future projects. Due to smaller team sizes and willingness of the artists to take on multiple roles or step into new ones, production management adapted from traditional feature workflows and scheduling. Many artists have been able to take on new roles they would not have had the ability to try on a feature film, which promoted close communication.

The successes of the shorts thus far have generated excitement and inspiration. Every Short Circuit project is as different and unique as the filmmaker; we are always surprised and delighted to see these ideas come to fruition. The experimental nature of Short Circuit allows us to open our minds to different ways of working. As the program continues, we hope to grow the culture of storytelling by further encouraging diverse participation in the studio and revisiting traditional workflows. We believe that it is a place to think differently and collaborate. Good ideas really do come from anywhere.

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