



Exploratory Study and Analysis on Color Grading Technique for Horror Short Movie

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Abstract

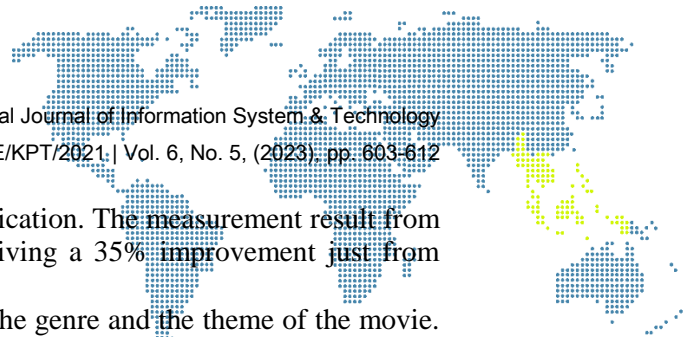
Horror is a movie genre where the main purpose is to convey fear, anxiety, suspense, and such to the audiences. On ensuring the success of a horror movie, there is one big factor that decides it, which is color grading. Color grading is one of movies editing technique which main purpose is to change color in a video, useful to build or support a desired atmosphere. Color grading is important in horror movies because if the applied technique does not fit with the movie concept, the desired message to convey will fail to deliver. In this study, a two version of horror short movie will be produced, with one version using a darker color grading tone (A) and the other one uses brighter color grading tone (B). The method used in this study is Research & Development, with Research using semiotic analysis and Development using Multimedia Development Life Cycle (MDLC) method. The semiotic analysis will focus on 10 horror movies with a rating of at least 7 based on IMDb US Box Office Rating, and the analyzed subject is the color grading technique used on each movies. The color grading analysis result then will be applied to the short movie production. After the short movie production has been finished, a blind test will be carried out to see which version of color grading suits better with the movie. The blind test is carried out with 53 participants, and the result is 39 participants choosing A and the other 14 choosing B. Due to the significance difference, a reasoning was asked to the participants. Most of the participants who chose A said A fits more with the movie concept and for them B does not really convey the horror from the movie, while those who chose B just gave personal preference as an answer.

Keywords: color grading, horror, short movie, semiotic analysis, R&D

1. Introduction

Movies is one of many entertainment media in the current age. Movies can be defined as a visual art made to simulate experience that delivers idea, story, perception, beauty, or atmosphere through a sequence of moving pictures [1]. There are a wide range of movies genre, and one of those genre is horror. Horror is a genre that's filled with scary and terrifying things, intended to give fear, anxiety, suspense, and such to the audiences. Generally horror genre involve something that's supernatural, mythical, and mysterious [2], [3]. There are many ways for horror movies to make the audiences feels terror, such as relying on audio or on visual. By relying on audio, horror movies usually uses melody that make the audiences feels uncomfortable, or using various loud and scary sound effects to surprise the audiences. Whereas by relying on visual, horror movies uses terrifying supernatural illustration, environment, and editing technique used on each scene. One of those editing technique is color grading [4].

Color grading is one of movies editing technique which purpose is to change color in video, useful to fix mistakes in camera configuration or to support the atmosphere built in the video [5]. Color grading is done during the post process after all the scenes in a movie has been taken. Color grading is a big determining factor in the final result of a movie production, because if the color grading technique applied in the movie isn't suitable then the film will fail to convey what is desired [6]. A study was done to see how big is the impact of color grading towards the final result of a movie. The study measured the impact by applying color grading to a documentary movie, then did a survey to see what



people thinks before and after the color grading application. The measurement result from that study is a before after ratio with 47%:82%, giving a 35% improvement just from color grading application [7].

Color grading technique application depends on the genre and the theme of the movie. Horror movie tend to use a darker color grading tone, to create a scary and creepy situation. However, there's a horror movie that uses the opposite color grading technique of what usually used in horror movie, which is a bright color grading tone. The movie in question is titled "Midsommar", produced by Ari Aster and released in 2019. Midsommar dominantly uses bright and colorful color grading, different with other horror movie in general. Despite the unique difference, Midsommar manages to convey uncomfortable feelings to the audiences. Because of this a study was done to compare Midsommar with another horror movie titled "Hereditary", also produced by Ari Aster and was released in 2018 but mainly uses darker color grading tone. The result of the study is the big factor that affect Midsommar's success is cinematography technique, sound effects, and image composition that's combined with terrifying scenes and bright color grading, so the scenes can be seen clearly by the audiences [8].

Based on these previous studies [7], [8], this study will produce a horror short movie in two version, one is with darker color grading tone and the other one with brighter color grading tone. After the production is finished, a blind test will be carried out to see which color grading technique application suits better with the short movie, as the blind test will give unbiased opinion towards the result [9]. The purpose of this study is to know how to decide which color grading technique to use in a horror short movie production, and how the color grading technique used affect the result of the movie.

2. Research Methodology

2.1. Research Flow

The method used in this study is Research & Development (R&D) because this method is suitable to produce a new product that can be in the form as a multimedia [10]. This study will also use blind test method to measure the result. The research flow can be seen in the following figure.

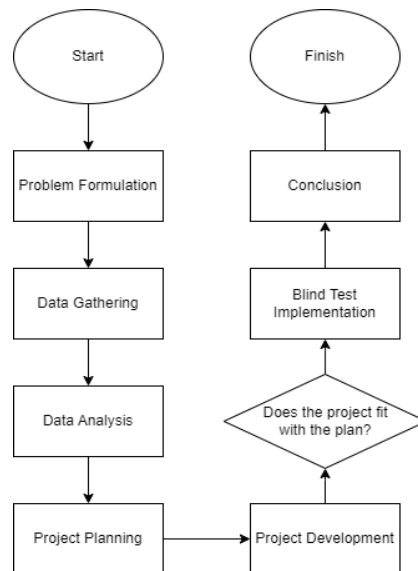
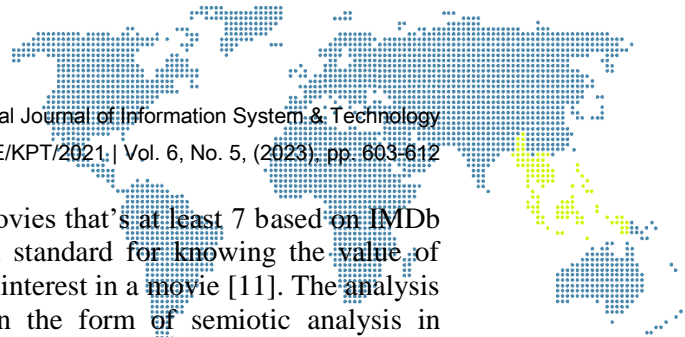


Figure 1. Research Flow

2.2. Research

The research focuses on finding differences related to the use of color grading technique used in horror movie. From these problems, data will be collected by analyzing



color grading technique used in high rated horror movies that's at least 7 based on IMDb US Box Office rating. Since IMDb has become a standard for knowing the value of movies, this can be used to determine the audience's interest in a movie [11]. The analysis will be done using qualitative analysis method in the form of semiotic analysis in accordance to John Fiske, by using the aspects analyzed in the form of Color especially in scenes with background elements that stands out. The scene selected are scenes that able to describe and show the color grading technique used in the movie. The purpose of the analysis is to obtain a reference for the color grading technique used in an international standard horror movie, which will be applied as ideas and concepts during the short movie development [12].

2.3. Development

After the research has been done, it will be followed by content design and development. The development method used will be Multimedia Development Life Cycle (MDLC), as it is suitable to use when producing a multimedia product that in this case is a short movie [13].

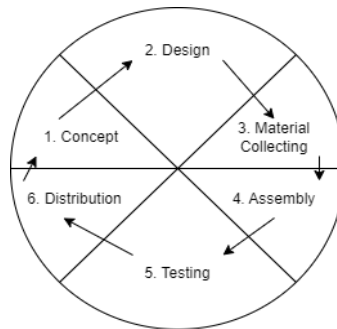


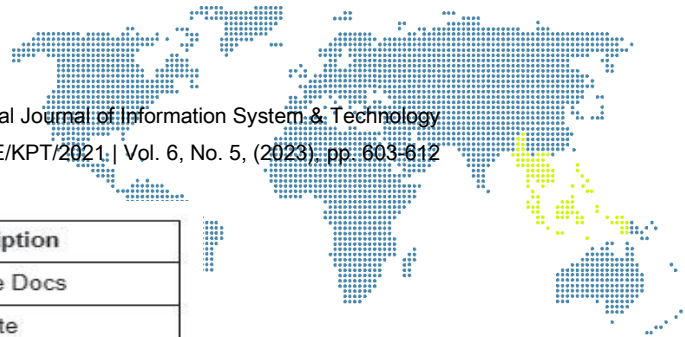
Figure 2. Development model used in the study, Multimedia Development Life Cycle (MDLC)

The description for each step of the development process is as follows:

- 1) Concept
 At this stage, the idea, concept, story, and theme of the movie to be produced will be decided.
- 2) Design
 After everything in the Concept stage is decided, the development process will continue with scenarios. The scenario will contains storyline, script, and setting. Following the scenario development, a shot list will also be made that contains all the essential essences from scenario with some visual addition for each scene.
- 3) Material Collecting
 Production process will start during this stage. The filming schedule is decided mutually with the team. The scenes to be shot will be based on the shot list that has been made during previous stage.

Category	Description
Camera	Sony ZV-E10
Lenses	Sigma 16mm f/1.4 DC DN Contemporary
	Sigma 30mm f/1.4 DC DN Contemporary
Lighting	Andoer KY-150W
	Barn Door + CTB Gel
	Triopo 65cm Octagon Softbox
	2x Light Stand 200cm
	3x Ulanzi VL49 RGB

Figure 3. Filming equipment



Category	Description
Scenario	Google Docs
Moodboard	Milanote
Shot List	Google Docs
3D	Blender
Post-Production	Davinci Resolve 18
Sound Library	Soundly

Figure 4. Used software

4) Assembly

The Assembly stage is split into six parts, which are:

a) Compositing

The compilation process of all the collected footage is done during Compositing part. The footage will be compiled according to the scenario and shot list made. After all the footage compilation is finished, each footage collected will be selected part by part so there will be synergy during transition for each scene. The unused part of the scene will be cut out.

b) Visual Effects

At this part, any visual effects needed to support the scene will be added to the footage.

c) Sound Design

After compiling all the footage and adding the visual effects, sound effects will be added to add more elements to the movie. As audio is a major factor towards the result of a horror movie production, the added sound effects will have to be carefully selected so it fits the theme and concept [14].

d) Color Grading

Color Grading process will be carried out after all the other parts are finished. Color Grading is done to refine the scenes so elements such as white balance or existing light conditions synergies well.

e) Rendering

During this part, the rendering process will be carried out into shareable video format so the testing and distribution stages can be processed.

5) Testing

During Testing stage, an evaluation will be done by using the blind test method. The blind test will be carried out by gathering a group of random people and playing both version of the color graded short movie side by side. After the viewing is done, the participants will be asked which color grading application suit the movie more, with A representing the darker color grading tone and B representing brighter color grading tone.

6) Distribution

At this stage, the finished short movie that have been evaluated will be published on the UIB Information System Study Program's YouTube Channel.

3. Result and Discussion








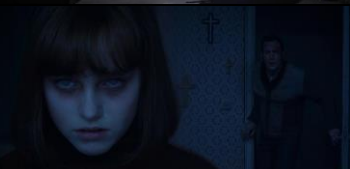
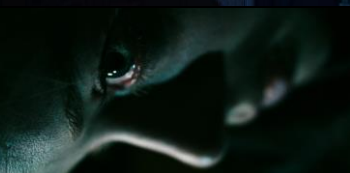
3.1. Research Result

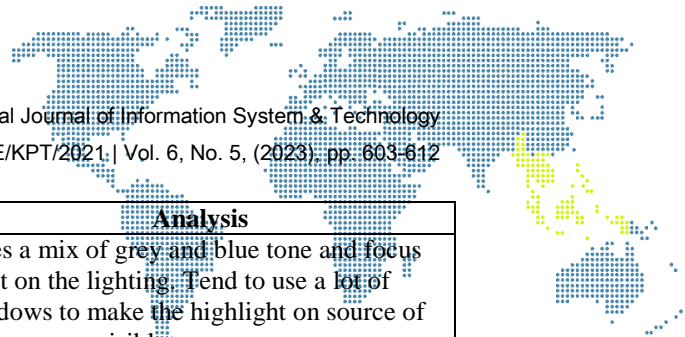
Horror movies uses color grading as a way to emphasize the message that wants to be conveyed to the audiences. Different scene will have to use different color grading application too so the sequences in the movie will be appropriate with the movie's theme and concept [15]. Therefore, an examination will be carried out towards 10 horror movies




that has been selected based on the IMDb US Box Office rating with a rating of at least 7. The result of the analysis can be seen in table 1.

Table 1. Analysis result

Title	Screenshot	Analysis
It		Generally uses darker tone with some addition of mild blue and greyish color to highlight the source of horror
Split		Use a mix of darker tone and some yellowish color to make scene atmosphere feels warm, while also giving spotlight to the shadows
A Quiet Place		Uses pale tone with a mix of green and grey hue when the source of horror appears in a dark setting, so it can be seen clearly
A Quiet Place Part II		Uses less pale tone compared with the prequel, but bolder tone of grey, blue, and green hue. Provide wider highlights to the whole setting instead of just a particular object
Sleepy Hollow		Focuses a lot on shadows by using dark blue and grey color tone. Combined with the lighting and angle, the source of horror is able to gain the spotlight needed
The Ring		Feels brighter than the other movie because the white balance usage along with a mix of green and blue color tone. Because of this, every object on the screen looks more accentuated.
The Conjuring		Mainly uses darker tone for the environment but when the source of horror came out it changes to brighter tone, giving visibility to the details in the scene
The Conjuring 2		Different with the prequel, this movie utilize high contrast and blue accents around the object to gives more highlight to the object
Don't Breathe		Uses a mix of dark and green tone to build tension since most of the setting is indoor. Using this tone gives more accentuated looks to objects in dark settings



Title	Screenshot	Analysis
The Exorcist		Uses a mix of grey and blue tone and focus a lot on the lighting. Tend to use a lot of shadows to make the highlight on source of horror more visible.

Based on the obtained result from the analysis, the conclusions are as the following:

- Blue color tone is commonly used to accentuate the shadows in the scene, giving more dramatic and horror atmosphere. Yellowish tone can also be used to accentuate the shadows but the resulting atmosphere will be warmer instead of horror, so this tone will need a proper setting to really utilize its usage.
- Grey and green tone is usually used in a dark setting to give highlights to objects in scene, since these colors tone blends well with the dark setting. Therefore, the object can still be seen clearly without breaking the established dark setting.
- While most movies used a generally darker tone in scenes with the source of horror, some uses brighter color tone with different scope of focus. Brighter color tone is used to increase visibility on the details in scene, and if utilized properly it will be able to convey the desired horror feelings to the audience.

3.2. Movie Development

Based on the Multimedia Development Life Cycle (MDLC) development model, the processes during movie development are described as follows:

1) Concept

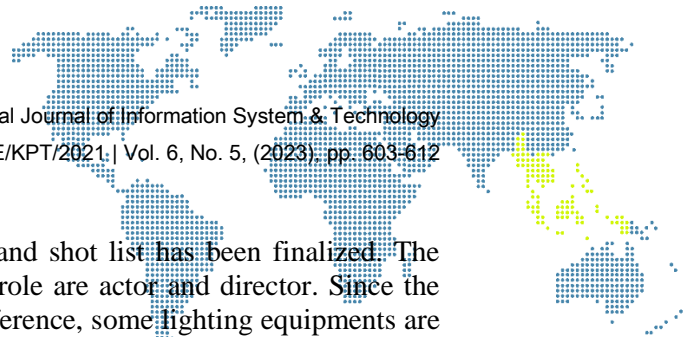
After going through some observations and considerations, the short movie produced will be titled "Not Alone". The genre decided will be psychological horror, where the main character will be affected by some supernatural happenings. The setting of the story will be in the main character's bedroom, and the shot will be taken during night time to minimize external lights interference.

2) Design

Scenarios and shot list made are based on the decided concept. The scenario contains detailed description of the scripts, sequel of events, settings, and timeline. The shot list contains the order of scene to be shot, along with shot type, camera angle, camera movement, and description of the shot with some additional details. The following figure is the scenario and shot list that has been made:

Skenario		Shot List					
1. KINERJA - MULAN	mulan adalah anak perempuan yang dalam dunia film dikenal sebagai seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	No	Scene	Shot	Cam. Angle	Cam. Mov	Desc.
2. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	1	1	Wide	Low	Static	[DCC] Reveal rumah yang ditinggal MC.
3. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	2	2	MS	Eye	Handheld + Follow	[Transisi] MC membuka pintu dan meletakkan botol di meja cam dan bergerak menuju meja laptop. MC tampak untuk duduk dan berinteraksi dengan laptop.
4. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	3	2	MS	Eye	Static	MC melihat layar laptop dan botol terjatuh.
5. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	4	2	CU	High	Static	Botol di lantai
6. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	5	2	MS	Eye	Static	MC mengontrol dan memeriksa botol lalu meletakkannya di meja laptop.
7. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	6	2	CU	Eye	Static	Layar laptop menunjukkan playlist "music"
8. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	7	2	CU	High	Static	Layar laptop menunjukkan video berjudul "Don't look in the mirror"
9. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	8	2	CU	Low	Static	Ekskresi keyboard MC dan berpaling ke kanan.
10. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	9	2	CU	Eye + OTS	Static	Rack kasus dari MC ke arah pintu yang terbuka.
11. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	10	2	MS	Eye	Handheld + Follow	MC berjalan dari kamar lalu menutup pintu dengan kunci dan mengambil handphone lalu berjalan ke tempat tidur.
12. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	11	2	MS	Eye	Static	MC memantulkan lampu tidur dan naik ke kasur lalu menggerakkan selimut.
13. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	12	2	MS	High	Static + Follow	MC dalam keadaan berbaring lalu membalikkan selimut dan kemudian dia kemudian dia menggerakkan selimut.
14. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	13	2	POST	POST	POST	Black screen
15. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	14	3	CU	Eye	Static	Jam menunjukkan pukul 3 pagi.
16. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	15	3	CU	Eye	Static	Menunjukkan meja laptop dengan botol yang sudah jatuh.
17. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	16	3	MS	Eye	Handheld + Follow	MC terbangun dengan cepat, mengambil HP dan menyaksikan flash dan menggerakkan flash ke arah meja. MC bangun dan tempat tidur.
18. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	17	3	CU	Eye	Static	Flash hp diarahkan ke seluruh arah meja dan akhirnya memantulkan botol berada di lantai dan menggerakkan.
19. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	18	3	MS	Eye	Static + Pan	Ekskresi keyboard MC memeriksa botol kembali. Tidak baik, vas bunga terjatuh dan pintu tertutup.
20. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	19	3	MS	Eye	Static	Lemari terbuka dan menggerakkan suara di dalam.
21. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	20	3	MS	Eye	Handheld + Follow	MC kebetulan dan berlari ke tempat tidur dan kemudian dia bergerak dengan cepat.
22. KINERJA - MULAN	Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani. Mulan adalah seorang gadis yang pemberani dan pemberani.	21	3	CU	Eye	Static + Handheld (Post)	MC berada di dalam selimut dan mendorong suara yang jatuh dan kemudian dia dan akhirnya muncul bayangan tangan memantulkan wajah MC.

Figure 4. Scenario script (left) and shot list (right)



3) Material Collecting

The shooting process takes after the scenario and shot list has been finalized. The process involved two people as a crew whose role are actor and director. Since the shot will wants to minimize external light interference, some lighting equipments are used to manipulate the lighting in the location. The color usage for the light are adjusted to be balanced and looks natural. The filming location can be seen in the following figure.



Figure 5. Filming Location

After the shooting process is finished, all collected footage will be cleaned up and sorted. Each footage will be analyzed to see which one fits more to the scene. After the analysis is done, sound effects are collected in accordance to the selected scene. The sound effects used are from an online audio library named Soundly, where the provided sound effects are able to integrate real-time.

4) Assembly

The description of each Assembly part is as follows:

a) Compositing

The footage collected are arranged using Davinci Resolve 18 application. The arranged footage then sorted to create a timeline using the scenario and shot list as a reference. Additional clean ups are also carried out during Compositing to cut out unused or unfit part from the scenes, so the transition between scenes will have more synergy. The resolution used for the timeline is 2048x890.

b) Visual Effects

Some visual effects are added as an element to support the scenes. Some of the added visual effects are lens blur effect and screen shake effect.

c) Sound Design

Sound effects are also added as a way to establish atmosphere and desired mood. Some of the added sound effects are squeak, eerie, rain, lightning, and few more effects that are commonly used in horror movie.

d) Color Grading

The main color grading tone used are a mix of blue and green hue to create horror and dramatic atmosphere. As there will be two version of finished color grading, the difference mainly located in shadows and high contrast setting. Darker color grading tone will use higher shadow setting and lower contrast setting, while brighter color grading tone is the other way around. The settings for the color grading can be seen in these following figures:

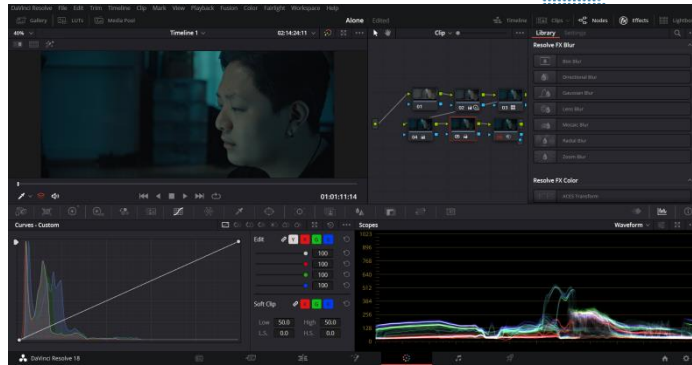


Figure 6. Color grading setting

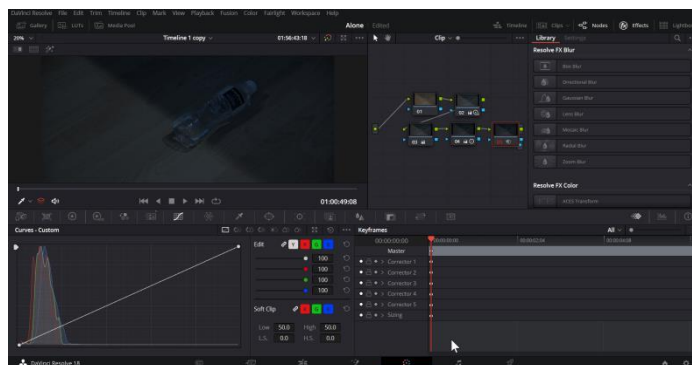


Figure 7. Color grading setting

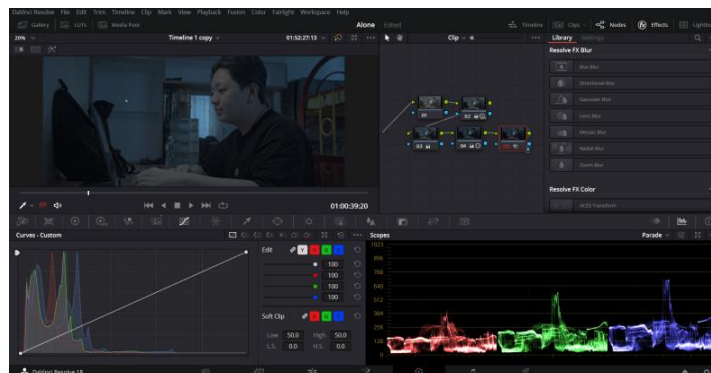


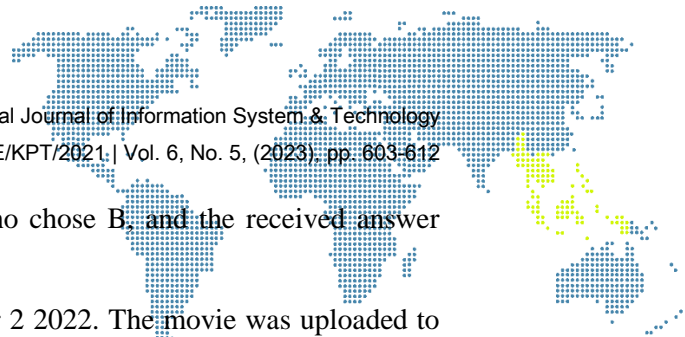
Figure 8. Color grading setting

e) Rendering

After the other parts are finished, the video will be exported into a video file using the mp4 container format. The finalized movie will have a duration of 3 minutes and 53 seconds, with a resolution of 4096x1780, a frame rate of 24fps, and used the H.264 codec.

5) Testing

The blind test was carried out with a total of 53 participants. All the participants are selected randomly without any specific criteria. The blind test process start with little briefing about the test, and then continued with the viewing. The result of the blind test is out of 53 people, 39 people chose A while the other 14 people chose B. Based on this result, the darker color grading tone (A) is significantly chosen more than the brighter color grading tone (B), with a percentage ratio of 73.58%:26.42%. Due to the significant difference, a question regarding the reasoning is asked to the participants who picked A. Most participants gave similar answer, which is the darker color grading tone fits more with the concept, and for them the brighter color grading tone does not really convey the horror feeling from the movie. The same



question was also asked to the participants who chose B, and the received answer was only personal preference.

6) Distribution

The finished movie is distributed on November 2 2022. The movie was uploaded to Batam International University Information Systems Study Program's YouTube channel. Since the upload, the video has received 102 views and 53 likes.

4. Conclusion

Deciding which color grading technique to apply during movie production is crucial because of how much it influence the result. Without fully understanding the planned concept, the decided technique might be incorrect and ended up failing to convey the desired message. Through this study, it can be concluded that brighter color grading tone needs specific horror concepts to work, unlike darker color grading tone that can work with general horror movie concept. Using Midsommar as an example, the movie uses brighter color grading tone in scenes that show uncomfortable and gory shots, making it fully visible. While darker color grading tone can generally work with any concept, it still needs proper color choice so the desired atmosphere can be created.

This study has some limitations such as hardware limitation and lack of work force since the crew only consists of two people. For future studies, it is expected to explore a wider range of horror genre to produce and a proper number of work force to minimize any limitations. It is also expected the use a wider color range for the color grading tone.

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