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Analysis and Development of 3d Animation and It's Usage as Environment in Horror Short Movie

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Abstract

The development of CGI in the world of multimedia can be said to have reached the highest point where the tools used can be reached by a wide audience. CGI, which has no limitations on what is included, has the potential to be used in many fields. The use of CGI such as 3D animation has become popular because of the flexibility it provides in the world of cinematography. To produce a film, a budget is needed to meet the crucial needs so that a shot can be fulfilled. However, not all productions have that budget. Then 3D animation can be an alternative to assist filmmakers in making a film, either in a whole or partially. In this research, the writer will produce a short live-action horror film by combining a 3D environment as one of the supporting shots. The research method to be used is Research & Development, starting with semiotic analysis and followed by the MDLC (Multimedia Development Life Cycle) approach. Semiotic analysis will be carried out on 10 horror films included in the ranking by the Box Office by analyzing the aspects of Lighting, Perspective, Color and Property. The 3D animation development will be accompanied by the film production process. After the finalization of the film, testing will be carried out in the form of media expert testing and publication on the UIB Information Systems Study Program's Youtube channel. The result of the research will be a short horror film with 3D animation applied as a supporting shot to the film.

Keywords: *film, 3D animation, environment*

1. Introduction

To convey the desired story in a film, there are cinematographic aspects that must be fulfilled so that the story can be conveyed properly. One aspect of cinematography in making a film is mise en scene which means 'to put on stage' [1]. Mise en scene talks about what elements will be included in a shot and how these elements are arranged. These elements are setting, actors, blocking, costumes, and lighting. The combination of these elements is part of the environment of a film.

Films have several genres, one of which is the horror genre. Horror is a film genre that focuses on building emotions and impressions of fear [2]. In general, horror films are related to things that are mystical, supernatural, occult and mystery related. Where these things can build tension in a film through jumpscares. To build a horror atmosphere, the environment works as a supporting role that can create an atmosphere of fear for the audience. The development of an environment can be done directly in the real world using real properties and sets or it can be done computationally with the help of CGI [3].

CGI is the application of computer graphics to create or contribute to images in art, print media, video games, films, television programmes, advertisements, videos, and simulators [4]. The effect of applying CGI can be in the form of static or dynamic images or three-dimensional (3D) images. Previously, access using CGI was very limited due to the complexity and limitations of the application itself. However, many applications have emerged that have been designed to make it easier for people to dive into the world of CGI. Some of the advantages of CGI are it requires fewer human resources to carry out the production process, it can provide realistic graphic quality with various variations and easy to controls, can be fully used for making 3D animation [5].

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3D animation is part of CGI (Computer Generated Image) which is the process of animating objects in a three-dimensional space consisting of height, width, and volume with the help of computer technology [6]. We will often encounter 3D animation implementations in various entertainment purposes such as film, advertising, television shows and video games. It doesn't end there, 3D animation is also used in other fields such as Medical, Legal, Architectural, and even used for Forensic purposes [6]. Development of an environment in a horror film can be done using 3D animation.

From a mise en scene prespective, to create an environment with a horror feel requires things that can trigger the audience to feel anxious. Generally, people believe that mystical things will appear at night. Therefore, building a scene with a nighttime background is the right thing. However, shooting at night will often experience difficulties due to the limited light source that can be used as a key light. The key light is the main light that has the greatest light intensity and illuminates the object directly [2]. To produce a film, a budget is needed to meet operational needs, such as renting cameras, lights, audio, and other equipments. Oftentimes, a limited budget becomes a barrier for filmmakers to produce a film [7]

One of the horror genres films that uses 3D animation to help design an environment is Stranger Things. Where in season 3 of this film there are many scenes that utilize 3D animation to create a 3D environment that is difficult to build in the real world. The visual effects created are also realistic, so it's hard to tell whether the set is set in the real world or not. With this phenomenon, many films have begun to adapt this film style, such as another Netflix horror series entitled The Haunting of Bly Manor. Just like Stranger Things, this film also uses 3D animation to build the environment and the characters in it. Not only that, in the horror film IT Chapter 2, several scenes were built using CGI due to the limited locations used and the difficulty of realizing the environment in the real world. The use of CGI in live-action films can be an alternative in conveying stories in a film [8].

In [6] research entitled "Perancangan Environment 3D dalam Animasi dengan Tema Permainan Tradisional di Kota Bandung" states that designing a 3D environment needs to pay attention to theoretical foundations such as lighting, atmosphere, perspective, color, setting and properties.

In [9] research entitled "Perancangan Environment pada Animasi 3D Tentang Penerimaan Diri Penyandang Disabilitas Daksa Akibat Kecelakaan" explains that aspects that need to be considered when making a 3D environment are lighting, arrangement of objects according to the story concept so that integrity appears between elements inside the environment.

In [1] research entitled "Perancangan Visual Environment Bertemakan Kampung Warna - Warni di Indonesia dalam Film Pendek Animasi “Corazón”", succeeded in creating a colorful village-themed environment using references collected during the data collection process and developed into sketches. rough used in the 3D asset modeling process.

Research conducted by [1], [6], [9] focuses only on 3D environment developers for animation as a whole and there is no research discussing the incorporation of 3D animation in making live-action films, especially films horror genre. For example, using establishing shots can help explain the relationship between characters and locations in the shot. These established shots can be substituted with 3D animation so that the shooting process can be shorter and save on production budgets. This research aims to support the use of 3D animation as an environment in live-action horror films which can be used as an alternative to strengthen storytelling in a film.

2. Research Methodology

2.1. Research Flow

By using the Research & Development research method, the author can develop a research flow framework that contains the stages of research that will be carried out.

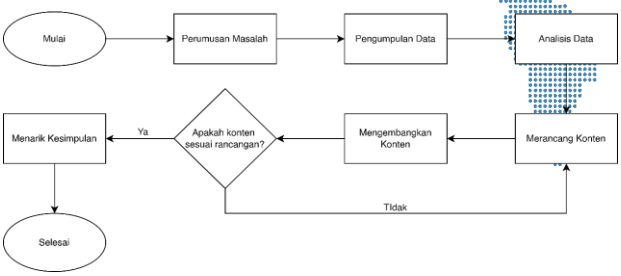


Figure 1. Research Flow

2.2. Research Model

By using the Research & Development research method, the authors chose to use the MDLC (Multimedia Development Life Cycle) development model. The following is an explanation of Research & Development in this study.

a) Research

The research begins with the writer finding problems with phenomena related to the use of 3D animation to build an environment in a horror film. From these problems, the writer will collect data by analyzing 10 horror films that are included in the United States box office. The box office itself has become a standard for knowing the finances of a film, this can be used to determine the audience's interest in a film. The analytical method used is qualitative analysis in the form of semiotic analysis according to John Fiske by using the aspects analyzed in the form of Lighting, Perspective (Composition), Color and Properties, especially in shots that have strong background elements. The selected shot is a shot that can describe and show the setting of the place related to the scene in the film scene. The result of the analysis to be achieved is to obtain a reference for the 3D environment in an international standard horror film so that it can be used in developing ideas and concepts for a 3D environment for a short horror film that will be developed.

b) Development

After data collection, it will be followed by designing and developing content in the form of creating a 3D environment with horror nuances using the MDLC (Multimedia Development Life Cycle) development model which will later be integrated into a short film.

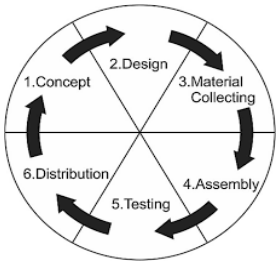


Figure 2. Multimedia Development Life Cycle

The following is a description of each step of this development model in the research that will be carried out:

1) Concepts
   At this stage, a review of the observations will be carried out so that the writer can create an idea, concept, and story from the film that he wants to develop.
2) Design
   Based on the ideas, concepts and stories previously determined, they will be developed into scenarios. The scenario will include storyline, blocking, time-place-setting of the set. Followed by making a shot list. The shot list will contain everything that is included in the scenario with additional visuals from each scene or scenes.

3) Material Collecting
At this stage, the production process will begin, namely shooting. Filming is carried out based on a schedule that will later be mutually agreed upon by the crew. The collection of each scene will be based on the shot list that has been attached in the second stage.

Table 1. Shooting Equipment

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

Meanwhile, creating a 3D environment animation will begin with the process of blocking the assets to be used and setting the camera's 3D composition. Followed by the texturing process. The next process is animating objects using keyframes and ending with rendering in mp4 format.

Table 2. Software

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

4) Assembly
At this stage, the merger will be divided into 6 main parts:
a) Compositing
It starts with compiling the collected footage so that a story is created according to the scenario and shot list that was made.
b) Trimming
This process is carried out to select parts of each footage and cut footage that is not used to create synergy in each scene.
c) Visual Effects
This process is the process of manipulating footage that can help support a scene.
d) Sound Design
In this process will do the addition of Sound Effects (SFX). This is done to build tension on the film. Sound enhancers like risers, booms, squeaks will make the horror feel even more.
e) Color Grading
The process of coloring or color grading will be carried out according to the conditions of the footage, such as white balance and existing light conditions.

f) Rendering
The process is the process of exporting the result into video form so that it can be shared for the purposes of the testing and distribution stages.

5) Testing
At this stage, an evaluation of the 3D environment and short films that have been made by conducting media expert tests will be carried out. The media expert test is carried out by distributing surveys to experts engaged in animation and film. The parameters that will be tested are Visual Design in 3D Animation and Visual Design in Film based on [10] research.

Table 3. Statement List

Aspect	Statement
Visual Design in 3D Animation	1. Pemilihan focal length dan angle kamera menciptakan prespektif yang natural untuk dilihat. 2. Penataan cahaya pada adegan memperlihatkan latar waktu malam hari. 3. Pemilihan komposisi warna kebiruan membuat ambience horor lebih terasa. 4. Penataan properti yang tidak berlebihan dan menambah kesan horor.
Visual Design in Film	1. Terdapat kesan horor dari cerita yang dibuat. 2. Pemilihan warna yang digunakan mampu memperlihatkan kesan horor. 3. Ketepatan pemilihan sound effect pada setiap adegan. 4. Ketepatan pemilihan komposisi dan angle kamera. 5. Penggunan sound effect mampu mendorong cerita pada adegan. 6. Kualitas resolusi video yang digunakan sudah memumpuni.

6. Testing
At this stage, short films that have undergone the evaluation stage will be published on the Youtube channel of the UIB Information System Study Program.

3. Result and Discussion

3.1. Research Result

Films tend to have an opening shot that introduces the setting of a shot in the film. The shot is called the Establishing shot, which is a shot that uses a considerable distance to show the spatial relationship between the main character, object, and setting [11]. So, one way to build an environment in a horror film is to use establishing shots. But sometimes, on the way to achieving the shots there is few obstacle such a limited budget[7]. Therefore, 3D animation can be used as an alternative to replace those shots that needed a big budget. The writer will examine 10 horror films selected based on the United States Box Office rankings. Table 4 is the 10 results of data analysis for each of the selected establishing shots along with the titles and images of each shot.

Table 4. Analysis

Title	Screen Grab	Analysis
IT		**Lighting**: Using sunlight on a cloudy day will make the light appear smoother. **Perspective**: Putting the main subject on the middle of the image helps to gain focus on the subject. **Color**: The pale color with gray tones shows the color resulting from the refraction of cloudy sunlight. The dark green trees in the background complement the overall gray tones. **Property**: objects such as broken iron fences and dry trees helps add to the horror elements.
IT Chaper Two		**Lighting**: The use of strong light enough to illuminate the house from the front. So that it can be seen even though it's pitch dark. **Perspective**: Filling the frame with the main subject helps to keep the focus on it. **Color**: With a green accent on the shadow, makes the spooky impression even more built up. The pale color of the entire area also emphasizes this aspect. **Property**: Placement of the character in the center also makes the focus on him and the house. Objects such as broken iron fences and dry trees helps a horror element.
The Ring		**Lighting**: Placement of one keylight behind the camera. **Perspective**: By creating leading lines and points of interest on the door, the focus on the door is more directed. **Color**: A bluish color with a white balance value of approximately 3500 Kelvin with a strong shadow to create color contrast in the midtones and highlights. **Property**: The placement of the photo frame helps to make the leading lines stand out even more.
The Nun		**Lighting**: Sunlight covered by clouds makes soft light. Even so, the shadows area still dominates the frame. **Perspective**: Using the rule of thirds, can show the character's interest on the building in front of them. **Color**: Typical horror color with bluish green accents on the highlights and shadows. Keeping the shadows high and low highlights. **Property**: The placement of the crosses between the characters builds a horror atmosphere.

Title	Screen Grab	Analysis
The Conjuring 2		**Lighting**: Cloudy sunlight/use of soft artificial light to remove harsh shadows. **Perspective**: Low and wide angle shots make the house and swing appear larger. **Color**: High contrast and blue accents in the shadow area to the gloomy impression. **Property**: The existence of a swing in the foreground helps explain that there are children in the house.
Sleepy Hollow		**Lighting**: Minimal use of external light and only rely on the bluish moonlight at night. **Perspective**: Utilizing negative space in the sky helps push the dark parts out more. **Color**: The dark blue color with high shadow adds a mysterious and gloomy impression to the area. **Property**: The addition of objects such as dry trees, scarecrows and haystacks in almost all areas of the hills adds to the impression of being haunted and deadly.
The Others		**Lighting:** Cloudy sunlight which makes the light softer as a keylight. **Perspective:** Using asymmetrical aspects and balanced proportions creates stability in the image. **Color: P**ale and cloudy colors create a mystical atmosphere with the help of fog in the area. **Property:** Shooting across the lake creates a reflection of the house which can encourage a balanced asymmetrical aspect to the image. The fog makes the area look mysterious.
The Amityville Horror		**Lighting**: The dawn light which is only found in the sky leaves the entire foreground and midground area completely dark. **Perspective**: With the dominant dark area in the image creating a very high contrast between the background and midground, the presence of light in the middle area draws focus to that area. **Color**: The purplish sky color gives a frightening impression, especially with dark areas that almost fill the entire frame. **Property**: The placement of dry trees almost everywhere adds to the somber effect.
Annabelle (I)		**Lighting**: The presence of artificial light that helps replace the moonlight from the right side of the frame helps fill in the shadow areas, so they don't look pitch black and creates texture in the house. **Perspective**: With a texture created by artificial light and warm practices in areas of the house, it helps to draw focus as it creates a contrast

Title	Screen Grab	Analysis
		between the area and its surroundings. **Color**: The bluish color becomes the main accent, and the high shadow adds mystery to the whole frame. **Property**: Placing the tree as the foreground helps fill in the empty frame and adds depth to the image.
Insidious: Chapter 2		**Lighting**: There is a main light from the right at an angle of 45 degrees from the front of the house as a keylight to show details in the house. Practical lights help illuminate the right side of the house that is not exposed to keylights. **Perspective**: Placing the cast and house at the rule of thirds helps make the frame look natural. The dark background creates a contrast between the houses which strengthens the focus towards the house where there is light. **Color**: With the dominant shadow on the edge of the frame, it forces the viewer to look at the house and leaves a mysterious feeling in the dark area. Natural colors with warm accents as if the effect of practical lights on the house. **Property**: The presence of bushes and trees on the outskirts of the frame helps fill in the empty background because there is no incoming light.

Using the analysis results obtained, conclusions will be drawn from each aspect analyzed. The following is the conclusion from the results of the data analysis above:

Table 5. Analysis Conclusion

Aspect	Analysis Conclusion
Lighting	a) External or artificial lights tend to be keylights that help identify subjects and areas in a scene. b) The use of minimal light at night by making the dark area more dominant also adds a mysterious atmosphere as if something is taking shelter in the dark area. c) The use of bluish light can help to replicate the light source to make it appear as if the light is coming from moonlight.
Perspective	a) To make the focus area look more natural to the viewer's eyes, using the rule of thirds helps draw focus indirectly. b) The foreground also serves as a support for creating depth in the image and building up the composition to make it look clearer. c) Adding points of interest such as the presence of a complementary color on an object that can attract attention by the difference between that color and the main color in the image. d) Taking pictures at a low angle and using a wide focal length helps to flatten the subject to make it look more wider.
Color	a) The bluish color can symbolize that the light that illuminates the area comes from moonlight which is generally symbolized by a bluish ambient light. b) Blueish colors with high contrast and saturation and dominant dark areas help create a dramatic atmosphere.

	c) Dark tones can emphasize the viewer that the shot is taking place at night. d) Cool tones show that the atmosphere or mood in the scene will make the scene feels tense.
Property	a) Supporting objects such as dry trees and bushes symbolize that the area is unkempt and tends to look haunted and gloomy. b) The presence of heavy rain can also increase this effect. c) The presence of fog in the shot helps refract the light and makes the fog more visible which can give a mystical effect.

3.2. Film Development

Using the MDLC (Multimedia Development Life Cycle) development model, the steps involved in the filmmaking process are described as follows:

a) Concept

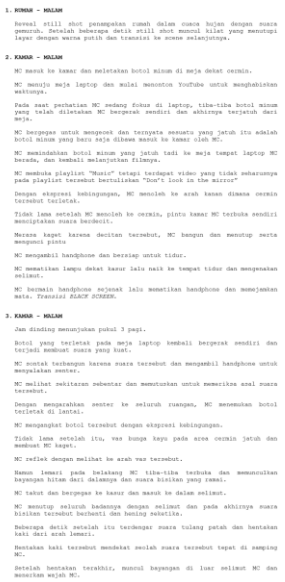
The idea of using 3D animation to build an environment will be applied in the establishing type shot. The shot will represent the residence of the main character. So that with the identification shot of the environment there will be continuity. The environment will be designed based on the conclusions that have been drawn through the data analysis that has been done.

The title of the film is "Not Alone". The filming location will be at the main character's bedroom. The concept of a horror film originated from the results of discussions with one of the crew to make a short horror film with the psychological horror genre, where the concept to be chosen had only one main character who was affected by a mystical disturbance in his room. The shot will be taken at night so that the sunlight doesn't interfere with the external light that will be used later on. The external light will be adjusted so it can mimicked the moonlight.

b) Design

Scenarios and shot list will be made based on the idea and concept earlier. Scenario will contain the storyline as well as a complete description of what will happen from the beginning to the end of the story. The shot list will contain a list of each shot that will be applied and will contain a brief description of what will happen to that shot, including the actor's movements, expressions and things that will go into the shot. The following is a scenario and shot list of ideas that have been developed:

Skenario



1. RUMAH - MALAM

Reveal still shot penampakan rumah dalam cuaca hujan dengan suara petirnya. Setelah beberapa detik still shot muncul kilat yang menutupi layar dengan warna putih dan transisi ke scene selanjutnya.

2. KAMAR - MALAM

MC masuk ke kamar dan meletakan botol minum di meja dekat cermin.

MC menuju meja laptop dan mulai menonton YouTube untuk menghabiskan waktunya.

Pada saat perhatian MC sedang fokus di laptop, tiba-tiba botol minum yang telah diletakan MC bergerak sendiri dan akhirnya terjatuh dari meja.

MC bergegas untuk mengecek dan ternyata seusatu yang jatuh itu adalah botol minum yang baru saja dibawa masuk ke kamar oleh MC.

MC memindahkan botol minum yang jatuh tadi ke meja tempat laptop MC berada, dan kembali melanjutkan filmnya.

MC membuka playlist "Music" tetapi terdapat video yang tidak seharusnya pada playlist tersebut bertuliskan "Don't look in the mirror"

Dengan ekspresi kebingungan, MC menoleh ke arah kanan dimana cermin tersebut terletak.

Tidak lama setelah MC menoleh ke cermin, pintu kamar MC terbuka sendiri menciptakan suara berdecit.

Merasa kaget karena decitan tersebut, MC bangun dan menutup serta mengunci pintu

MC mengambil handphone dan bersiap untuk tidur.

MC mematikan lampu dekat kasur lalu naik ke tempat tidur dan mengenakan selimut.

MC bermain handphone sejenak lalu mematikan handphone dan memejamkan mata. Transisi *BLACK SCREEN*.

3. KAMAR - MALAM

Jam dinding menunjukan pukul 3 pagi.

Botol yang terletak pada meja laptop kembali bergerak sendiri dan terjadi membuat suara yang kuat.

MC sontak terbangun karena suara tersebut dan mengambil handphone untuk menyalakan senter.

MC melihat sekitaran sebentar dan memutuskan untuk memeriksa asal suara tersebut.

Dengan mengarahkan senter ke seluruh ruangan, MC menemukan botol terletak di lantai.

MC mengangkat botol tersebut dengan ekspresi kebingungan.

Tidak lama setelah itu, vas bunga kayu pada area cermin jatuh dan membuat MC kaget.

MC reflek dengan melihat ke arah vas tersebut.

Namun lemari pada belakang MC tiba-tiba terbuka dan memunculkan bayangan hitam dari dalamnya dan suara bisikan yang ramai.

MC takut dan bergegas ke kasur dan masuk ke dalam selimut.

MC menutup seluruh badannya dengan selimut dan pada akhirnya suara bisikan tersebut berhenti dan hening sebetika.

Beberapa detik setelah itu terdengar suara tulang patah dan hentakan kaki dari arah lemari.

Hentakan kaki tersebut mendekat seolah suara tersebut tepat di samping MC.

Setelah hentakan terakhir, muncul bayangan di luar selimut MC dan menerkam wajah MC.

Shot List

No	Scene	Shot	Cam. Angle	Cam. Mov	Desc.
1	1	Wide	Low	Static	[3D] Reveal rumah yang ditinggali MC.
2	2	MS	Eye	Handheld + Follow	[Transisi] MC membuka pintu dan meletakan botol di meja cermin dan bergerak menuju meja laptop. MC bersiap untuk duduk dan berinteraksi dengan laptop.
3	2	MS	Eye	Static	MC melihat layar laptop dan botol terjatuh.
4	2	CU	High	Static	Botol di lantai.
5	2	MS	Eye	Static	MC mengambil dan memeriksa botol lalu meletakkannya di meja laptop.
6	2	CU	Eye	Static	Layar laptop menunjukan playlist "music".
7	2	CU	High	Static	Layar laptop menunjukan video berjudul "Don't look in the mirror".
8	2	CU	Low	Static	Ekspresi kebingungan MC dan berpaling ke cermin.
9	2	CU	Eye + OTS	Static	Rack fokus dari MC ke arah pintu yang terbuka.
10	2	MS	Eye	Handheld + Follow	MC bangun dari kursi lalu menutup serta mengunci pintu dan mengambil handphone lalu berjalan ke tempat tidur.
11	2	MS	Eye	Static	MC mematikan lampu tidur dan naik ke kasur lalu mengenakan selimut.
12	2	MS	High	Static + Follow	MC bermain handphone lalu mematikannya beberapa detik kemudian dan memejamkan matanya.
13	2	POST	POST	POST	Black screen
14	3	CU	Eye	Static	Jam menunjukan pukul 3 pagi.
15	3	CU	Eye	Static	Menunjukan meja laptop dengan botol yang tiba-tiba jatuh.
16	3	MS	Eye	Handheld + Follow	MC terbangun dengan kaget, mengambil HP dan menyalakan flash dan mengarahkan flash ke arah meja, MC bangun dari tempat tidur.
17	3	CU	Eye	Static	Flash hp diarahkan ke seluruh arah meja dan akhirnya menemukan botol berada di lantai dan mengambilnya.
18	3	MS	Eye	Static + Pan	Ekspresi kebingungan MC memeriksa botol tersebut. Tidak lama, vas bunga terjatuh dan pintu lemari terbuka.
19	3	MS	Eye	Static	Lemari terbuka dan mengeluarkan suara bisikan.
20	3	MS	Eye	Handheld + Follow	MC ketakutan dan berlari ke tempat tidur dan menutupi dirinya dengan selimut.
21	3	CU	Eye	Static + Handheld (Post)	MC berada di dalam selimut dan mendengar suara tulang patah dan hentakan kaki dan akhirnya muncul bayangan tangan menerkam wajah MC.

Figure 3. Scenario and Shot List

c) Material Collecting

The assets used in the film are footages from shooting, sound effect from sound library, and 3D animation that will be developed. The filming process involves 2 crews who act as directors and actors respectively. The lights will be sorted using the analysis technique, such as shooting carried out at night with the help of the Andoer KY-150W LED as a keylight and blue color temperature gel to simulate moonlight. Ulanzi VL49 RGB LED will act as a fill light that fills parts that didn't reached by the keylight. The colors of the lights are adjusted to the keylight to make it look natural and balanced.

Figure 4. Filming Location

After the shooting process is done, the footages will be sorted in order to make the post-production easier. Each take will be analyzed to get the continuity of the story and the shot list will be used as a benchmark for the suitability of the take. The sound effect used will come from an online audio library called Soundly. Soundly provides sound effects, background music and foley which can be integrated in real-time into non-linear editing applications (NLE). The majority of the audio is collected concurrently with the footage sorting process.

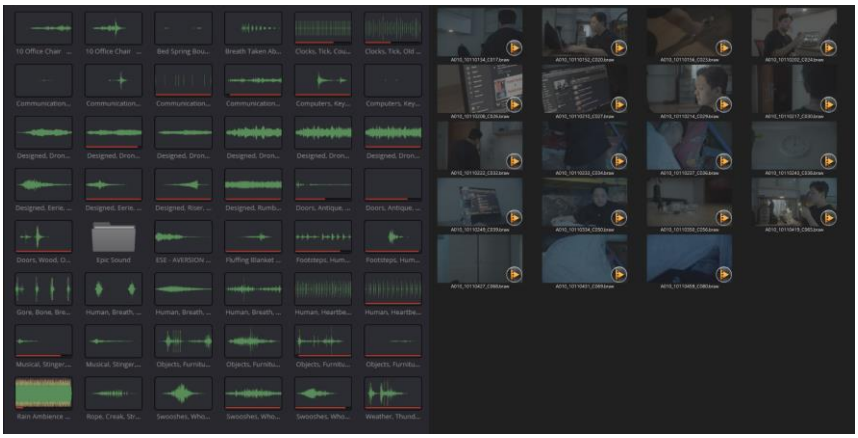


Figure 5. Sorted Footages and Sound Effects

Before starting making the 3D environment, a moodboard will be made to be used as a reference so that you can still refer to the main concept. Moodboards are made from a collection of images that are selected and sorted according to predetermined ideas and concepts. The process of creating a 3D environment begins with blocking 3D properties and objects using Blender. Based on the results of the analysis carried out, wider lens tends to be used for establishing shot. Therefore a lens with a focal length of 35mm and a low angle will make the image looks massive and spacious

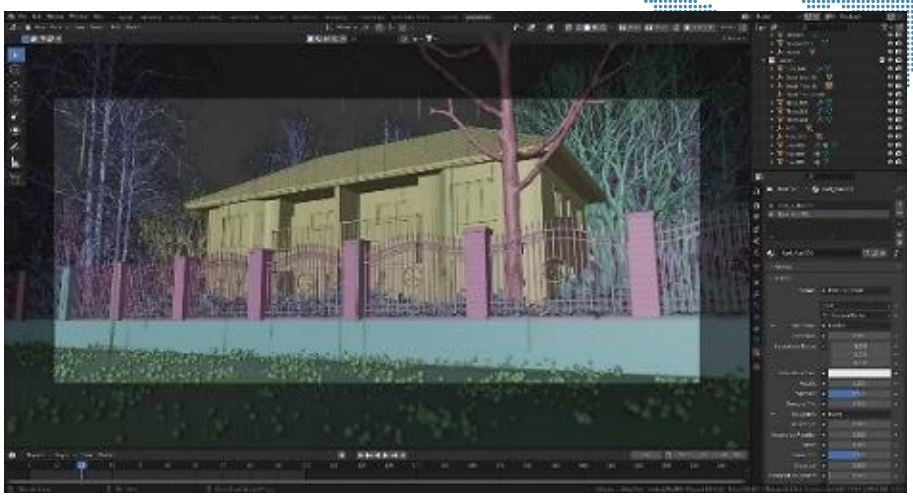


Figure 6. Composition Settings

Furthermore, all existing models and assets will be given textures and materials to make them look realistic. Rain is animated using a keyframe that lasts 5 seconds and that keyframe controls how fast the rain falls. Apart from that, fog is also used in this shot to help create a mystical atmosphere. The placement of the lights will be based on the results of the analysis obtained. The color of the light used is bluish light with a Kelvin value of 3500K. That way, the light can be simulated as moonlight at nighttime. There are 2 keylights that illuminate the foreground and 2 fill lights that illuminate the background. With all of that cleared, the shot will be rendered in 24 fps and 2048x890 resolution with an mp4 format.

Figure 7. Final Render

d) Assembly

The following is a description of the assembly process which involves the post-production process:

1) Compositing

   The arrangement of footage within the Davinci Resolve 18 timeline to build the overall story with the shot list as the main reference. Trimming is also done at this part. The timeline resolution used is 2048x890.

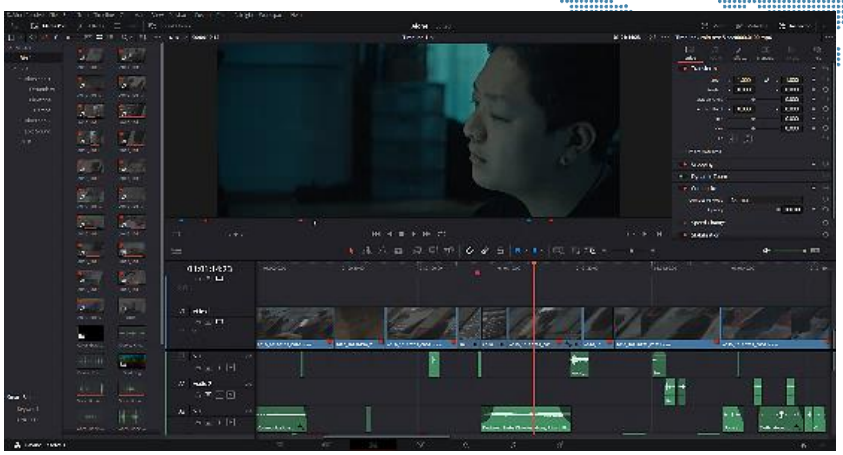


Figure 8. Visual Timeline

2) Visual Effects

Adding effects to some shots is needed to help push the visuals of the shot. Like adding a lens. The effect added to few other shot to compliment the same purpose.

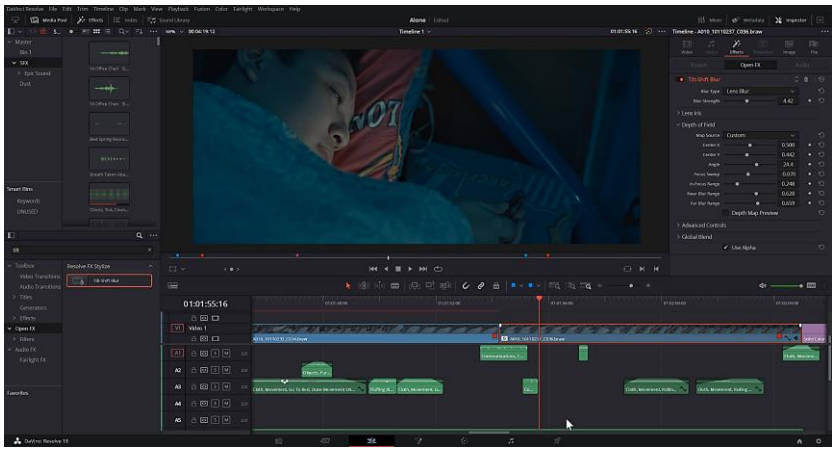


Figure 9. Added Lens Blur Effect

3) Sound Design

Sound effects are arranged in such a way as to encourage each scene so that the story or events in that scene can be displayed. The use of sounds such as the sting, drones, eerie and foley. Rain sound effects were also added starting from the first shot which is a 3D animation that was developed.

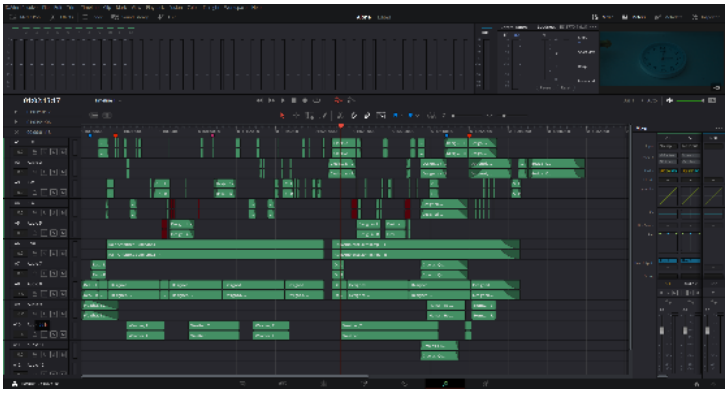


Figure 10. Audio Timeline

4) Color Grading
The color grading follows the color base made in 3D animation so that it looks natural as a whole. The main color tone used is a bluish color combined with green tone to enhance the horror atmosphere in the film. Shadows and high contrast help to make the shot look darker and represent a nighttime setting.

Figure 11. Color Grading Timeline

5) Rendering
Exporting the result of editing into a video file with the mp4 container format. The resolution of the film will be 4096x1780 and the frame rate is 24 fps. The codec used is H.264.

Figure 12. Rendering Tab

e) Testing

The media expert test was carried out by 5 validators as lecturers in the multimedia field at Batam International University. The aspects tested are aspects of Visual Design in 3D Animation and aspects of Visual Design in Film. The data collected will be processed using the Likert scale formula based on research conducted by Yulfida, (2021). Prior to processing, an interval will be determined as a reference for the percentage of feasibility of each aspect.

I = 100/Total Score (Likert scale)
I = 100/5
I = 20 (Percentage value interval from 0% to 100%)
Then the interpretation of the score based on the percentage above is as follows:

Table 6. Score Interpretation

Persentase	Information
0% - 19,99%	Sangat Tidak Setuju

Persentase	Information
20% - 39,99%	Tidak Setuju
40% - 59,99%	Netral
60% - 79,99%	Setuju
80% - 100%	Sangat Setuju

The following is the processing of the data collected:

Table 7. Visual Design on 3D Animation

Statement	Evaluation				
	SS	S	N	TS	STS
1	2	3			
2	5				
3	2	3			
4	1	4			
Total	**10**	**10**	**0**	**0**	**0**

Calculation of the feasibility score of these aspects uses the following formula:
∑score = (5 x total SS) + (4 x total S) + (3 x total CS) + (2 x total TS) + (1 x total STS)
∑score = (5 x 10) + (4 x 10)
∑score = 90
Percentage = score x 100 %
Highest score
Percentage = 90 x 100%
100
Percentage = 90% (SS)
From these percentages it can be concluded that the 3D animation created can be used as a supporting shot to explain the setting of the place, time and atmosphere in the horror film being made.

Table 8. Visual Design on Film

Pernyataan	Penilaian				
	SS	S	N	TS	STS
1	1	4			
2	2	2	1		
3	5				
4	2	3			
5	5				
6	5				
Total	**20**	**9**	**1**	**0**	**0**

Calculation of the feasibility score of these aspects uses the following formula:
∑score = (5 x total SS) + (4 x total S) + (3 x total CS) + (2 x total TS) + (1 x total STS)
∑score = (5 x 20) + (4 x 9) + (3 x 1)
∑score = 139
Percentage = score x 100 %
Highest score
Percentage = 139 x 100%
150
Percentage = 93% (SS)
From the percentages it can be concluded that there is continuity between 3D animation and horror films being made.

f) Distribution

After those testing, the film is uploaded to Batam International University Information Systems Study Program Youtube channel. The film was uploaded on November 2, 2022 and after 1 month from the time of upload, the video has received 632 views and 94 likes.

Figure 13. Uploaded Video

4. Conclusion

Many filmmakers with limited budgets have difficulty maximizing their planned shots. The development of CGI is currently at it's peak where the manufacturing process can be easily done with only 1 person. 3D animation is an alternative to make impossible shot come to life. One type of shot is the establishing shot which involves the environment of the film. By applying the principles of cinematography to creating 3D animation, the animation can easily replace a live-action shot and having the ease of making changes to the shot. Such as changing the setting from day to night. Through this research, writer hope it can support the use of 3D animation as a support in making live-action horror films. With the support of the validator through the media expert test conducted, it can be concluded that 3D animation can support storytelling as well as an explanation of the time, place, and atmosphere in a horror-themed short film.

In future research, it is expected to be able to explore more deeply regarding the implementation of 3D animation in horror films. Such as the application of 3D animation for the entire environment so that continuity between films and 3D animation is more effective when compared to this research. In this research, in the process of making the 3D animation it takes quite a time to be completed due to hardware limitations.

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