Hybrid Animation: 4K Syndrome Among Student and How To Overcome

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Abstract. “4K Syndrome” is a 3 minutes animated short for student university. The objective of the project is to adapt hybrid animation techniques in the animation, and to evaluate the viability of the techniques in preserving the aesthetical details of the animation. This title is related to university students who are often associated with 4K syndrome which means computer, lecture, bed and cafeteria, in Malay it is called as Komputer, Kuliah, Katil, Kafeteria. This syndrome often happens to students at universities regardless of public or private universities. With all the sophistication and convenience of today's technology, is it true that the syndrome associated with this 'epidemic' is increasingly contagious among students? Reference, studies and design of the project is planned in pre-production. The production covers the preparation of assets, animating the assets, and compositing of the animated footages. The blending of the integration will be tested in the testing phase. The animated short and a complete documentation of the project is expected from the project.

1. Introduction

This title is related to university students who are often associated with 4K syndrome which means computer, lecture, bed and cafeteria, in Malay it is called as Komputer, Kuliah, Katil, Kafeteria. This syndrome often happens to students at universities regardless of public or private universities. With all the sophistication and convenience of today's technology, is it true that the syndrome associated with this 'epidemic' is increasingly contagious among students?[1] Compared to the early 2000s, the age of the student about 15 years ago, has never been revealed about this syndrome, though, the 4K symptoms have begun to appear, but it does not matter and becomes a matter of discussion [2].

Animation of Two-Dimensional (2D) and Three-Dimensional (3D) known as hybrid animation is one of the most popular techniques used by many designers or animators to make cartoons, hybrid animation short story and many more. The creation and presentation of hybrid animation is not a new thing in multimedia industry. Hybrid animation is a 2 dimensional and 3 dimensional measurement of X, Y and Z scale on a flat plane. It is also the creation of moving pictures in a two-dimensional environment, such as through "traditional" cel animation or in computerized animation software. Although nowadays, 3D animation is the new type of animation in industry, yet there are more advantages in using hybrid animation. One of the advantages is the process to create and manipulate the objects are easier. Besides that, hybrid animation cartoons are more simple and funny look[3].
The two most exhausting processes in 2D animation production are, the generation of key-frames and in between frames. The enormous amounts of still animation are produced by most cartoon studios manually, which is time-consuming and heavy. Compared to 2D animation, three dimensional animation take advantages such as, ease of camera motion, complex lighting and shading, realism and high reusability of assets from scene to scene[4].

The mixing of 2D and 3D assets is a kind of special approach for hybrid animation. The blending should be consistent throughout the film when combinating the two types of elements. At the National Centre for Computer Animation Bournemouth University, UK. D. Kravtsov, O. Fryazinov, V. Adzhiev, A. Pasko and P. Comninos has discussed a set of well established problem in computer animation and computer games that are difficult to solve using currently available methods. Their approach is based on the idea of hybrid modelling that allows to combine animated polygonal meshes with function representation (FRep) models. Such a hybrid model consists of an animated polygonal mesh and an approximation of this mesh by an FRep stand-in. The two models can be combined using one of the proposed methods. The motions of both dynamic objects are synchronised through the underlying skeleton used for the definition of the animation. Their method allows us to model interactions between the animated characters and viscoelastic substances with arbitrary time-dependent topology, as well as to model partial or full metamorphosis of animated characters with specified Level of Detail (LOD)[5].

2. Related works
University students are threatened with 4K syndrome, i.e., Lecture (supposedly only to attend lectures, not even the focus), the Cafeteria (just sitting aside with lounging), Beds (good friends with beds and extreme sleep) and Computers (just sit in the virtual world itself, entertain social media and do not want to mix together). The extent to which it erodes the quality of graduates of local university graduates and overshadows the absence of local graduates in the highly skilled job markets [1].

In principle, 2D and 3D animated images are still created in much the same way as they were traditionally, although the technology has improved. One of the oldest forms of animation is cell shading, whereby each cell or frame is drawn individually and placed into a linear sequence. This was originally accomplished with pencil or ink on a ‘cell’, and would be coloured later on by a dedicated colourist and layered over other cells in the sequence.

The approaches from the films is studied, however not all of them will be selected to be implemented in this project. Bola Kampung The Movie showed great efforts in blending 2D and 3D assets, however it is line programming approach will not be adapted into this project due to time constraints and lack of related skills. The following issues determine how one medium is chosen over the others.

When 2D and 3D animation is created today, it tends to utilise digital software and frame technologies such as onion-skinning. This allows for faster, more accurate and more easily editable sequences, although some purists would argue these methods lose some of the charm of analogue animation. Adam claimed that both instances rendered in two dimensions during the animation process [6].
Figure 1. Innovation of texture from 2D animation to 3D animation (Animasia Studio, 2014)

Figure 1 shows Bola Kampung The Movie is an animated film from Animasia Studios, one of the famous animation production in Malaysia. Animasia mostly produces 2D film. Animasia is the earliest animated production in Malaysia. In 2004, they have won Singapore Animation Super Pitch 2004 with the animation trailer House of Loo and won Best Animation Short Film 2004. In 2013 they make an improvement to develop the 3d animation. Figure 1 show the innovation of animation in Malaysia [7].

Figure 2. SeeFood (Goh Aun Hoe, 2012)

Figure 2 shows SeeFood is a Malaysian computer-animated adventure film produced in 2012 by Silver Ant, with grants from the Ministry of Science, Technology and Innovation as well as support from the Multimedia Development Corporation (MDeC). An animated film with a very fascinating design and
an advanced look can make a great success with a welcome reception abroad. This film is using fully 3D animation. Figure 2 shows the cover of SeeFood movie [8].

![Figure 2. SeeFood Movie](image)

Figure 2. SeeFood Movie

Figure 3 shows Treasure Planet is a 2002 American animated science fiction adventure film produced by Walt Disney Feature Animation and released by Walt Disney Pictures. It is the 43rd Disney animated feature film. The film is a science fiction adaptation of Robert Louis Stevenson's adventure novel Treasure Island and was the first film. It is an interesting animation and use all the characters in 3D animation, while the background uses 2D animation. Thus, when it is combined, this animation is in hybrid animation. Figure 3 shows one of the scenes in the Treasure Planet movie [9].

Comparing the films, the production studios were using the mixing approaches for different purposes. Bola Kampung The Movie’s production animated the actor based on 2D assets for 3D animation. In SeeFood, Using 3D material as reference for smoother and precise animation. Also in Treasure Planet use hybrid animation approach in the development. Table 1 shows some points and comparison features made by films when applying 2D and 3D approaches.

### Table 1. Comparison of the Previous Projects

| Index | Title                  | Released (Year) | Remarkable approaches in the integration of 2D assets                  | Nationality |
|-------|------------------------|-----------------|-----------------------------------------------------------------------|-------------|
| [7]   | Bola Kampung The Movie  | 2013            | Breakdown of 2D assets for 3D animation.                             | Malaysia    |
| [8]   | SeeFood                | 2012            | Using 3D material as reference.                                      | Malaysia    |
| [9]   | Treasure Planet        | 2002            | Building a 3D environment made of 2D visual elements (Hybrid Animation) | America     |
3. The structural design of the 2D animation

In the development of 2D, it goes through some of the processes commonly used by some animation industries as shown in Figure 4.

![System Planning and 2D Modeling Diagram](image)

**Figure 4.** The structural design of the 2D animation.

### 3.1. System Planning

In animation design, the main factor is the design of the character and the environment. Character design plays an important role in the presentation of animations. It does not matter from the shape of the body to the facial expression of the character. Figure 5 shows the sketches and storyboards in the making of an animation. Storyboard is important as an introductory idea before doing character modeling.

![Storyboard Example](image)

**Figure 5.** The storyboard in designing character and environment

### 3.2. 2D Modeling

The 2D Modeling is the process of manually creating geometrical object models which meet desired design criteria and Cinema 4D software are used. The features in the Cinema 4D software has a significant impact on the product development process, allowing improved quality, reduced cost, and aids products to get to market faster. Nowadays, the approaches from the films is studied, however not all of them will be selected to be implemented in this project. The development in Figure 6 showed great efforts in blending 2D assets, however it is line programming approach will not be adapted into this project due to time constraints and lack of related skills. The following issues determine how one medium is chosen over the others.
4. Conclusions
After being observed in this 2D animation project. Among them, the animated shows are very short but full of the good content. This makes audiences feel satisfied when watching. In addition, the animation shown is in silent form, only motion and background sound. The boundary and the nature of terms used in the project were studied and described. The old and current techniques and technology of current animation process were explained, then related to this project. The comparison of existing works refine, by a greater distance, what to be experimented and achieved in this project. The methodology explained the process of the project. The software and hardware requirements are briefly brought up, and will be further discussed. This animation is very interactive to the user due to the suitable color selection and lighting in this animation. Multimedia consists of orderly instructions and codes written by the programmer in any special computer language. Before using a software, the individual needs to evaluate more about a software in a subject to give a deep understanding.

References
[1] Sinar Harian (2017). Awas, jebak sindrom 4K [online] available from <http://www.sinarharian.com.my/kampus/awas-jebak-sindrom-4k-1.647627>
[2] Sinar Harian (2017). Awas, jebak sindrom 4K [online] available from <http://www.sinarharian.com.my/kampus/awas-jebak-sindrom-4k-1.647627>
[3] O’Hailey, T. (2010) Hybrid animation: Integrating 2D and 3D assets. Amsterdam: Elsevier Science.
[4] Sito, Tom (2013). Moving Innovation: A History of Computer Animation. Massachusetts: MIT Press. ISBN 978-0-262-01909-5.
[5] Laybourne, Kit (1998). The Animation Book: A Complete Guide to Animated Filmmaking– from Flip-books to Sound Cartoons to 3-D Animation. New York: Three Rivers Press. ISBN 0-517-88602-2.
[6] Laybourne, Kit (1998). The Animation Book: A Complete Guide to Animated Filmmaking– from Flip-books to Sound Cartoons to 3-D Animation. New York: Three Rivers Press. ISBN 0-517-88602-2.
[7] Bola Kampung (Animasia Studio, 2014).
[8] SeeFood (Goh Aun Hoe, 2012).
[9] Treasure Planet (Ron Clements, 2002).