and "education" are the main ingredients in determining the character that is designed. The use of colours and accessories used also cannot be separated from deep research. In addition, the vision of how the mascot is implemented in all government-owned city branding programs must also be considered so that the design results do not stop at the media promotion.

The city government serves as the main motor in running a city branding. A clear vision and mission is needed so that the values to be achieved by Malang City can be implemented in the design of the mascot that is considered capable of representing the city. In addition, openness to creativity and technical matters in designing are also needed so that the design results do not stop at the announcement of the winner of the competition project organized by the government. In the end, it was concluded from this study, that the mascot design as part of city branding is the result of the collaboration of various parties in the city. In addition, it requires openness and commitment from various parties so that the implementation of city branding can be activated in various parts of the city because city branding is not only owned by the government, but also belongs to the entire city.

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3D VISUALIZATION FOR AUGMENTED REALITY IN 'JAJANAN PASAR' PUZZLES

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Yusup S. Martyastiadi[3]

Abstract: Jajanan Pasar is a term for Indonesian traditional snacks, a part of Indonesian culture that have been forgotten by young generation. Three-dimensional (3D) animation and Augmented Reality (AR) can be used as a medium for introducing this culture to children aged 4 to 6. Because, in AR, visual between real and digital world can be altered, so the visual of 3D models can be enjoyed from various sides. This study focuses on 3D visualization for AR that packaged in 5 set of puzzles. Each piece has illustration of the ingredients for making 5 kinds of Jajanan Pasar, after all puzzle pieces of each set get arranged, a new 3D model of traditional snacks will be appeared. The data was collected using literature and existing studies method. The purpose of this study is to create an optimal 3D visualization for AR that will be applicated for mobile devices. Conclusion from this project are the polygon count and target marker's quality, affect the appearance of 3D model in AR form.

Key words: 3D visualization, traditional snacks, augmented reality

Introduction

Jajanan Pasar is a term for Indonesian tradi-tional snacks that often sold in the traditional market. Aside for consumption, some of them have its own philosophy, and often used for religious ceremony. For example, from this project, 'Klepon' have philosophy from how it made. 'Kue Apem' and 'Kue Mangkok' are of-ten used for religious ceremony. 'Nagasari' and 'Kue Bugis' are have philosophy from how it wrapped in banana leaves. These traditional snacks and its philosophy should be introduced to

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Figure 1. Puzzle sets and flashcards in Jajanan Pasar as an indication place to visualize the 3D object.

young generation, especially children aged 4 to 6 that in their prime age to learn (Wright, 2005). However, in this modern era, modern snacks as cookies, desserts, pastries seem more appealing for chil-dren. Their catchy and classy appearance, easy to made than traditional snacks, are some reason why modern snacks more popular than traditional snacks. The attempt to introduce Jajanan Pasar to children is using technology, be-cause in these days, children are can be used for it. As AR can altered visual between real and digital world, the 3D models and simple anima-tion of 5 Jajanan Pasar and its ingredients can be enjoyed from various sides.

Theory

AR can be used for helping and entertain our daily life, for example, AR was used for education, game, travel, transportation, shopping and manual book (Kusnadi, 2016). Low poly modeling is a modeling technique to make a model with low polycount (Russo, 2006). Low poly modeling is often used to make 3D models in AR, because there is poly-gon count that can affect the visual appearance and real-time rendering speed of the 3D models in AR form (Cawood, 2007). For mobile devices, about 300 to 1500 polygons can be used to give a good quality results for the 3D model (Unity3d, n.d.).

AR require tracker object as known as AR marker, which composed by some unique patterns or images and will be used as tracking object (Cawood, 2007). Aside from using markers, now we can use any surface in the physical environment as tracking object to augment the AR object, this method is known as markerless AR.

In this project, puzzle was used as tracking object to visualize the 3D models in AR form, and as educative media to introduce Ja-janan Pasar for children. As children aged 4-6 like to play and learn new things, puzzle can be used to train their patience, accuracy, visual, mathematics, and problems solving skills (Patmawati, 2016).

Method of "Jajanan Pasar"

Overview

3D Visualization for Augmented Reality in 'Jajanan Pasar' Puzzles

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There are 5 sets of puzzle and cards that physically available as AR markers. Each puzzle set and card has different color, illustration of Jajanan Pasar and ingredients. Total 3D assets for this project are 24, that consist of 5 Jajanan Pasar models (Klepon, Nagasari, Kue Bugis, Kue Mangkok, Kue Apem) and 19 Ingredients mod-els, that consist of Santan (coconut milk), Gula (sugar), Garam(salt), Pewarna Makanan (food coloring), Ragi (yeast), Tape Singkong (ferment-ed cassava), Kelapa (coconut), Tepung Beras (rice flour), Ketan Hitam (black glutinous rice), Telur (eggs), Tepung Ketan (sweet rice flour), Air (water), Gula Merah (palm sugar), Daun Pisang (banana leaf), Pisang (banana), Tepung Terigu (wheat flour), Daun Pandan (screwpine) and Daun Suji (Suji leaves).

Figure 2. Jajanan Pasar Project Packaging

Visual Concept

Illustrations for the Jajanan Pasar and its ingre-dients were inspired by the real form of them that can be found in daily life, and illustrated in simple imaginative painting style. The illustra-tions of Jajanan Pasar as the main focus for this project, are more imaginative than the ingredi-ents, they have mouth and eyes to give more life and appeal for them so the children can remember and learned them. As for the ingredients, the visuals are more simple and realistic.

Figure 3. Reference for Jajanan Pasar Project

Figure 4. Illustrations of Jajanan Pasar

Figure 5. Illustrations of Ingredients in Jajanan Pasar Project

Visualization for Augmented Reality

The 3D models are based from the illustrations in each puzzle pieces and

card. They were made in 3Ds Max and restricted to around 1500 polys (low poly). As the polycount is restricted, alpha channel texture was used to form leaf models, and for making a simple particle effect. Some modifier like mesh smooth and smooth were used to made the 3D model's sides smoother and appealing. After all models were finished, they were exported into Unity software to combine them with markers package, and convert them into AR mobile application.

Figure 6. 3D assets of Jajanan Pasar Project

There are simple animations for each 3D models, that represent characteristic of each ingredients and Jajanan Pasar. Animation for Jajanan Pasar is more imaginative, and indicate their characteristic as chewy snacks. On contra-ry, animation for the ingredients are more realis-tic, such as animation about how to use them in daily life, or their characteristic.

Markers are used to visualized 3D models in AR form. There are 3 kinds of markers, the first one is marker for each puzzle piece that will visualize ingredient models in AR form. When all puzzle pieces in each set get together, it will be the second marker that visualize market snack model in AR form. The last is in the flashcards that will visualize all ingredients for each market snack in real comparative size. This interactivity concept can be seen in the image below.

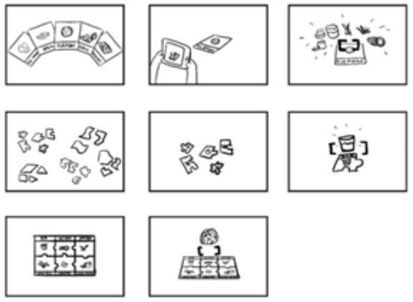

Figure 7. Interactivity concept

Vuforia is a friendly AR software platform for beginner AR developer. Because its procedure is easy to understand for people who didn't have any programming experiences. Developer just have to prepare the images that will be used as AR markers, upload them to Vuforia devel-oper site, and the images will be automatically converted into AR markers, after that, developer can download them as Unity package. In Vuforia, developer can check the marker's sensitivity, because a good marker will produce a stable AR.

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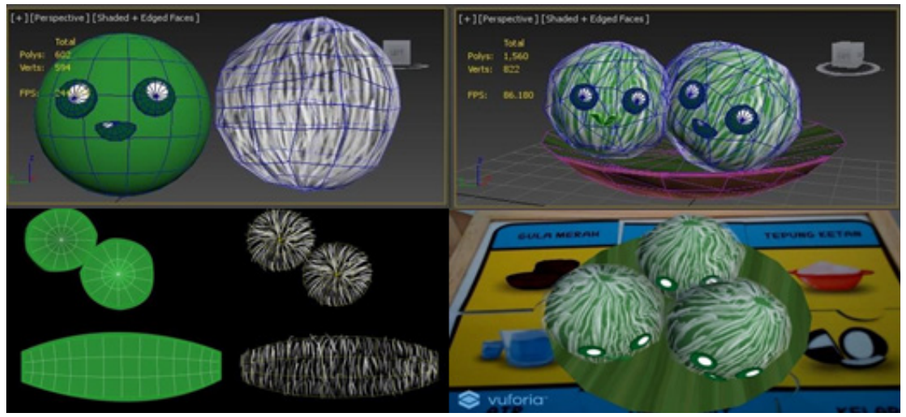

Figure 8. Klepon Models (First and Second Images), Klepon's Textures (Bottom Left), and Klepon models in AR Form (Bottom Right)

how to use them in daily life, or their characteristic.

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Analysis

Optimizing the Models and Markers

Best example for optimizing models and mark-ers in this project can be found in Klepon models. There is some trial and error in these models. For example, the first modeling attempt for Klepon models are exceed the 1500 polys rule, about 1954 polys or 3810 tris Klepon models are made and applicated to AR form for mobile application. The result is the AR become unsta-ble, shaking, and the quality is reduced, so, the polys were reduced into 780 polys or 1560 tris. There were 80 looping frames of simple anima-tion that represent the characteristic of Klepon. To optimize the models, there are 2 parts of spheres, one for the body and other for grated coconut, that the texture was made from alpha channel texture. Alpha channel texture is more efficient to reduce the grated coconut model's polycount than using some planes and formed them

into grated coconut. There are 6 pieces of puzzle for Augmented Klepon models, that consist of the ingredient for making Klepon.

Figure 9. Klepon markers in red and purple

At the first attempt, the puzzle set's colors are red and purple, but there is some object in the puzzle pieces that aren't readable as AR marker when they converted in Vuforia. The legibility indicator is shown as small yellow cross in the marker, and it can be checked when converted a tracker object into AR marker in Vuforia. Thus, to solve this legibility problem, the set's colors are changed into yellow and blue.

Aside from Klepon models, there are Santan (coconut milk) models that consist of a bowl, a pack of Santan, and a simple animation of San-tan's liquid. For Santan's pack, to optimized the polycount, high detailed texture was used. This can reduce the polys into 399 or 798 tris.

There was a problem in Santan's marker, that its legibility was low because of the illustration. The first illustration is a bowl of Santan, that isn't legible as an AR marker, that caused by all round sides in the illustration and its color contrast with the background color was about the same. To solve this, the illustration in the marker is changed into a Santan's package, and have a high contrast with the background color. The legibility of this new marker is higher than the old one, that indicated with yellow cross as in the images below.

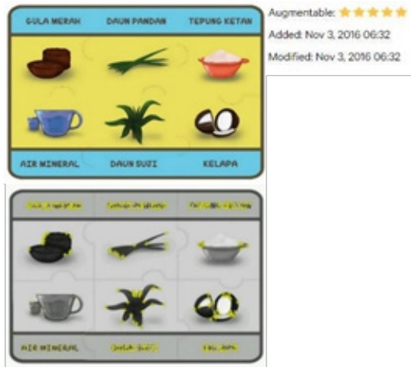

Figure 10. Klepon markers in yellow and blue

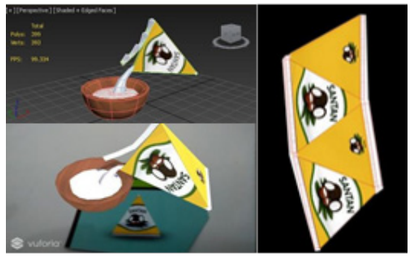

Figure 11. Santan models & santan pack texture

Figure 12. Santan's illustration & marker, before (Left) & After (Right)

Alpha Channel for AR Models

In this 3D model, there is a simple particle visual effect that was made of a single plane and alpha channel texture. This method is more effective to optimize the polycount than using 3D particle effect simulation.

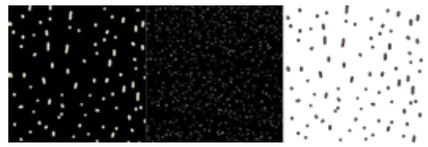

Figure 13. Alpha channel particle textures

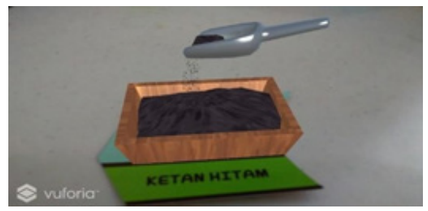

Figure 14. Applied alpha texture in AR

Shell modifier must be applied to fill the back side of all alpha channel texture plane, because there is some difference to apply alpha texture in 3Ds Max and Unity. When the modifier wasn't applied in the models, back side of the models didn't appear, as in the image below, if it not solved, it can affect the visual appeal of the AR.

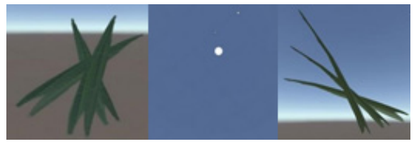

Figure 15. Front side (left) & back side (center) of the models without shell modifier and with shell modifier (right) in Unity

Besides using alpha channel texture as simple particle effect, it can be used to form the plane into leaf, as in the image below. With using this method, the polycount can be optimized.

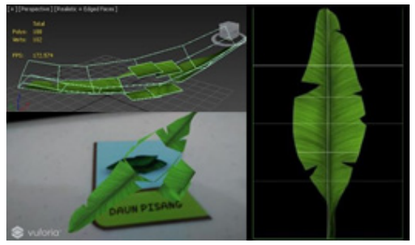

Figure 16. Alpha texture for banana leaf model

Conclusion

3D visualization for animation films and Aug-mented Reality are different. As AR needs real-time rendering and in this project, is used for mobile, low poly modeling is used to make the assets. Because there is polycount that will af-fect the AR's performance and quality in the

mobile application. If the polycount exceed 1500 polys as Unity recommended, the heavier smartphone works that will lead to an unstable display of the AR.

To optimize the polycount, in modeling phase, alpha channel textures can be used to form the models, and used made simple particle effects. But, the alpha channel texture should be modified with shell modifier to fill the plane's back side, because there's a difference to apply alpha texture in unity and 3Ds Max that can affect visual appeal of the models.

Color and contrast between marker's background layout color and the illustration can affect the legibility of the marker as an AR marker can interfere the stability and sensitivity to call the AR. Aside from that, when the mobile application was running, mobile camera's quali-ty and its environment's lighting can affect marker's legibility to call the AR.

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COLOUR IMPLEMENTATION WITH FAUVISM STYLE TO LIMITED AMINATION CHARACTER "WE ARE DIFFERENT YET WE ARE SAME"

Nur H. Firdaus[1]
Agatha Maisie Tjandra[2]

Abstract: Fauvism is an art form in the beginning of modernism art era with focusing on color implementation that doesn't have to represent the reality, showing the strong bond of the artist with the atmosphere he drew. Fauvism color implementation will be implemented to the short animation film with limited animation technique, "We Are Different, yet We Are The Same". In the making, the writer uses qualitative research method. Data that gathered used as a base for the writer on character designing in limited animation "We Are Different, yet We Are The Same" with fauvism style.

Key words: Character, fauvism, limited animation

Fauvism

In 1905 located in Paris, art gallery Salon d'Automme exhibits paintings from artists with a breakthrough of using bright colors, considered as flat, and adding subjects and objects that seems deviate. The name Les Fauves which means "Wild Animal" was given by Louis Vauxcelles in a review of Salon d'Automme exhibition in 1905 for a French newspaper called Gil Blas. Fauvism artists have many styles in drawing, they don't take their creation as a part of real life. Skin colors can be painted with blue of green, grass and sky can be red, everything depends on what is meant to be delivered without having to follow the color proportion from the real object, (Hodge, 2013).

Color Wheel

Edwards (2004) wrote that Albert Munsell is a made the color wheel system based on physic knowledge. The color of wheel consisted of 3 colors category are primary, secondary, and tertiary.

Figure 1. Color wheel

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