

Stop Motion and Mortal Kombat

The Mortal Kombat series is one of the most influential fighting game series around. The most revolutionary aspect it brought to fighting games was the ability to perform a “fatality,” a gruesome signature death move to end the fight with style after one player has been defeated. This “finishing technique” idea has been imitated in several other fighting games.

While fatalities were awesome, there is another revolutionary concept used in the first installments of the Mortal Kombat series that is often over looked. This is the way it displayed its characters. When the original Mortal Kombat was released, most fighting games at the time used sprite based characters. This is a common theme in video games and is still used in many portable games today. Sprite based games represent characters by using a limited number of still frame images of the character. These images are displayed based on what the character is doing at the time. Figure 1 contains the character sprites for Mario in the original Super Mario Brothers. Since Mario only has a small number of actions he can perform, only 27 sprites are used. To compare this to the number of sprites needed for a fighting game character, let’s look at Ryu from Street Fighter II, a fighting game which was released at nearly the same time as Mortal Kombat. Ryu has many more sprites, 101 to be exact, as his movements are much more complicated. See the “Additional Figure” section at the end of this paper to see all 101 character sprites for Ryu.

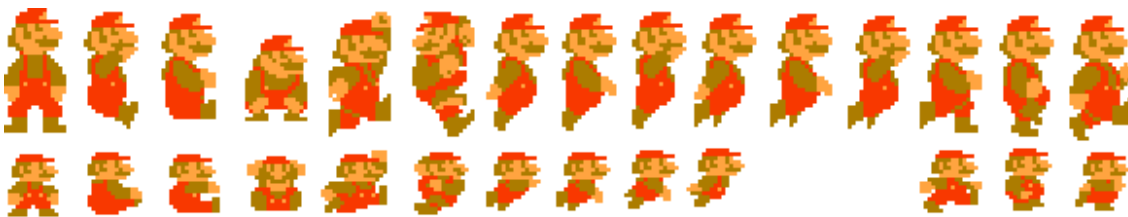


Figure 1: Sprites used in Super Mario Brothers.

When game production company Midway was making Mortal Kombat, they decided to put a new spin on the sprite approach. Rather than use a handful of illustrations to represent a character, they decided to use photographs of real people. They had people dress up like the characters, and then took pictures of them in various positions to get the

sprites they needed. The end effect was not only really cool, but also a great middle ground for sprite based characters vs. live action. By using photos of real people as sprites, the game looked much more realistic than if illustrations had been used. By using still shots rather than the live footage, Midway was able to limit the number of character images that needed to be stored.

Another great aspect of this way of doing graphics was the ability to merge the real with the fictional. For example, the character Liu Kang is able to shoot fireballs from his hands. When this is done, an illustrated fire is shot from the photo of actor/martial artist Ho Sung Pak. This combination makes for a very cool visual experience. It also allows ridiculous things to look realistic. See Figure 2 for the sprites for this. The character Scorpion removes his mask to reveal that his head is just a skull. By using the photo of Daniel Pesina's body and putting an illustration of a skull where the head should be, Midway creates a seamless blend of realism and fantasy. See Figure 3 to see this.



Figure 2: Liu Kang shoots a fireball. Notice that after the second sprite the same photograph is used and only the fireball changes.



Figure 3: Scorpion removes his mask to reveal an illustrated skull.

This merger of real and fiction had a lot to do with the popularity of the fatality. The fatalities are so gruesome that they could never be performed on real people. Instead, they start with the images of real people and switch over to illustration. Scorpion's fatality, for example, involves him breathing fire at the opponent which burns away all the flesh to leave only a fiery skeleton. This is done by displaying the real opponent, drawing an illustrated fire over top of him, and showing the illustrated skeleton once the fire is removed. The sprites for this skeleton are shown in Figure 4. Kung Lao of Mortal Kombat 2 has a fatality where he slices his opponent in two using his hat (don't ask how,

it's a really sharp hat). The sprites for Liu Kang being sliced in two are shown in Figure 5. By combining illustrated gruesomeness with images of real people, the fatalities reached a whole new level of realism in video game violence, which worried many parents.



Figure 4: The skeleton which replaces the photo of a person when Scorpion's fatality is used.



Figure 5: Liu Kang appears to be split in half by adding the illustration of gore and separating the photo of actor Ho Sung Pak.

Ultimate Mortal Kombat 3 was the last installment of the series to use this style of graphics. It was also the climax of how realist the characters looked. See Figure 6 for images of the characters from Ultimate Mortal Kombat 3. Ever game since then the series has used polygon based 3D graphics to keep up with current trends in gaming. While the 3D rendered images look great, the game losses much of its realism.



Figure 6: Some of the characters from Ultimate Mortal Kombat 3. The level of detail is stunning.

This style of graphics is very ideal for fighting games. It is fairly intuitive what types of positions will be needed when taking the pictures. Relating it to things we've talked about in class, I would say it is most like the stop motion way of doing things. The only twist is adding that the images are moved around the screen after they are captured. Using true stop motion, a jump kick would be done by having someone suspended in the air with an outstretched leg, and moving him forward a little bit in between each shot. In Mortal Kombat, a single shot of the person is used, and by applying a translation transformation to the image, the effect of motion is achieved. Another benefit of using stop motion on just the character and not the scene is that that motion can be placed into any environment against any opponent.

Stop motion is the technique what is used when doing "claymation." Midway used this to make the bosses of the game more imaginative. Goro, a boss from the first Mortal Kombat, is a four armed monster. See Figure 7 for the claymation Goro used in the game.



Figure 7: The claymation boss, Goro.

Nearly all of the transformations we've talked about in class are used in the game as well. Rotation transformations are used during movements like back flips. Scaling transformations are used during some fatalities, one in which the character Jax grows very large and steps on his opponent. During this scene, Jax is scaled up while the opponent is scaled down. Reflection transformations are used to determine which direction the character is facing.

The Mortal Kombat series has been very popular, and is still making games today. The first few installments are what built up its reputation, and the graphic style used in those games was an amazing blend of real people, fantasy, and gore. I'd be interested to see if this style of graphics can be applied to 3D games.

Sources

www.wikipedia.org

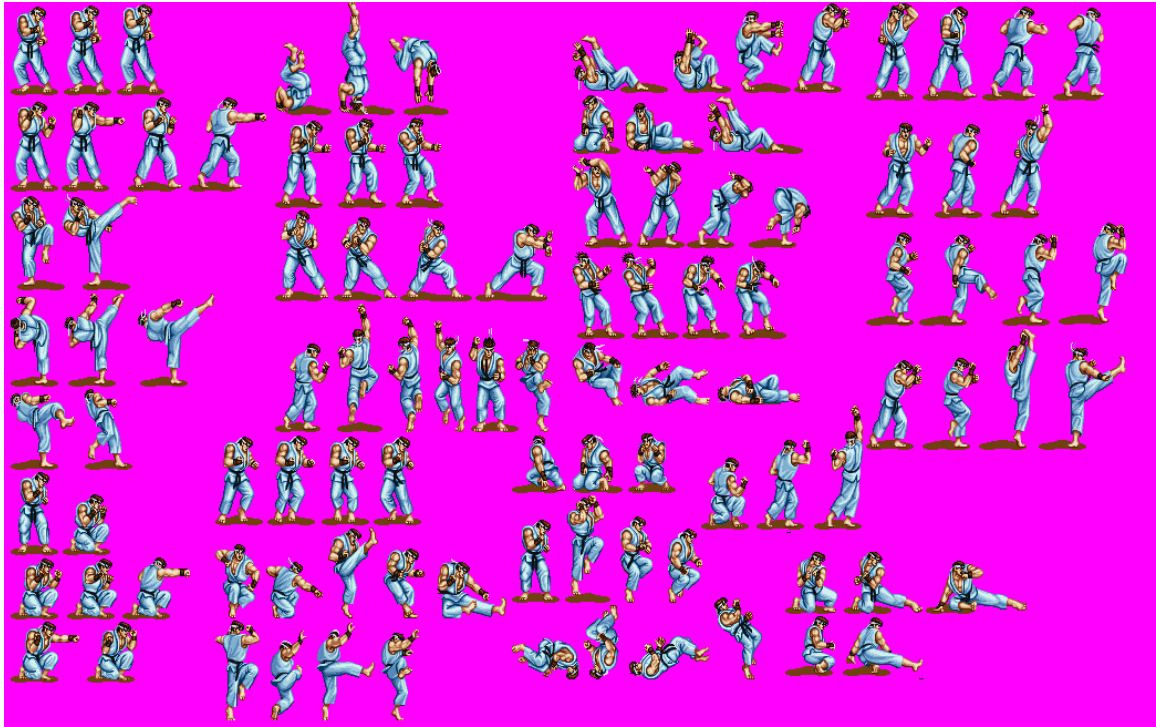
www.nes-snes-sprites.com

www.videogamesprites.net

www.gsarchives.net

www.mortalkombatonline.com

Additional Figure



Additional Figure 1: All 101 Character sprites for Ryu.