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Title:

Tentative: Light of Miracle

Updates

1. Electric Bolt

We have gathered and researched the methods for creating the electric bolt that is to surround the lead actor when he touches the bulb. It appears that there are simple, unrealistic methods as well as harder but more realistic methods. Simple methods can be implemented by use of Adobe Photoshop or Adobe After Effects. In the simple effect, we shall create an animated arc surrounding the lead actor. We will color it light blue and blur the edges. As a final touch up, we shall add noise to the picture to enhance the electrical effect.



Figure1: Simplified lightning rendering.

There are two other methods dedicated to lightning bolt rendering that are worth mentioning, as detailed in [1,2]. Both methods promises realistic rendering. While [1] promises efficient rendering, it is optimized for outdoor lightning effects, which may be unnecessary for our purposes. [2] is a physical based animation, based on the dielectric breakdown model for modeling electric discharge. It also allows parameterization that allows simple artistic control of the simulation. Seen below are the effects of electric bolt dodging corners, which may be useful for making the lightning bolt revolve around the

lead actor. Notice also that spikes appearing in the electric bolt is also realistically achieved in these two methods, which the simplified method does not cater.

The glow on the actors due to the electric bolt must also be simulated. We are thinking of using blue light on the actors to see if the effect is realistic enough. If not, the colors will have to be artificially added via After Effects.



Figure 2: Rendering using Dobashi, Yamamoto & Nishita [1]

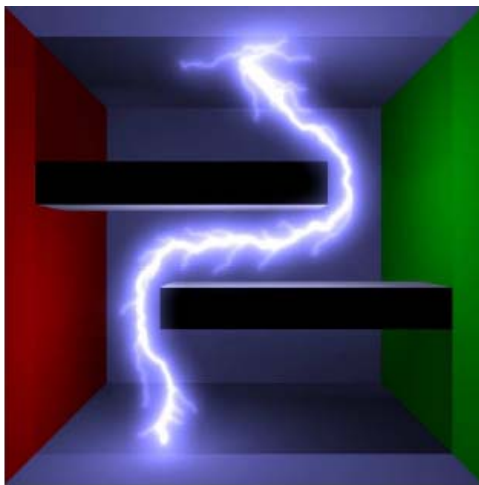


Figure 3: Rendering using Theodore Kim, Ming C. Lin [2]

2. Clothes Dropping Sequence

We have brain stormed several methods for creating the clothes dropping sequence. One of the suggested methods is to combine motion tracking, blue screen effect and clean plate methods. We shall be using Lucas-Kanade motion tracking, or Kalman Filter to track the motion of the clothes on the lead actor. Once we have those positions in the video, with the help of a clean plate and the blue screen, we can extract the lead actor's clothes and warp them to create the effect of clothes falling.

We could also make the lead actor disappear, track his clothes, and then match his clothes with a model which we will create, which will eventually fall. That is to say, we using

masking to mask out the person in the picture, then match his position to a super imposed model. Blend the model into the video, then let the model fall. The critical part to this implementation is the moment after the lead actor is digitally removed, the matching and blending has to be quickly and cleverly done to make it seemingly natural, followed by the drop.

Since this is the core effect in our video, it may be worth investing the time to make this portion realistic. However, these methods may be challenging.

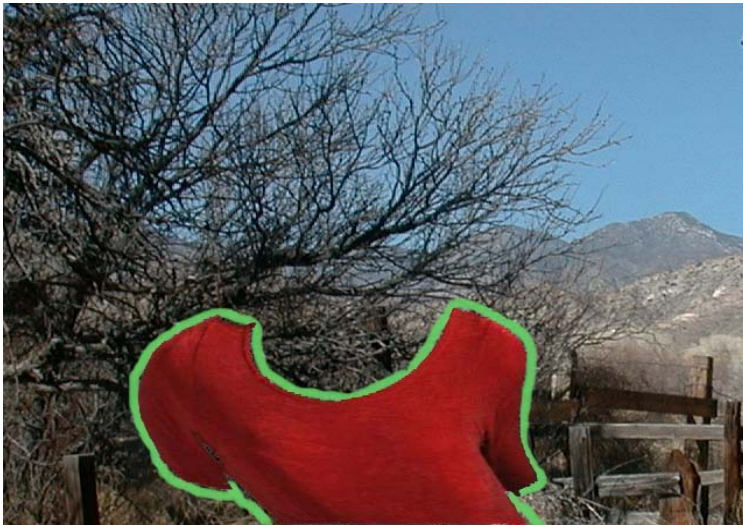


Figure 4: Use of Motion tracking to track the clothes before warping it

Sequence story board/ other implementation details

The clothes dropping sequence is divided into 3 stages, as described below.

Invisible man stage: At the instance when the man starts to turn invisible, he will still be moving for a short period of time before his garments start to drop. As indicated in the storyboard, the reason for the movements is due to astonishment and fear. There will not be any deliberate drastic movements but complementary reaction in accordance to the man's mental state, which is fright. For this effect to be successful, matching the moves during the transition from the visible man to the "invisible" man is needed. The invisibility role will be performed by the same man clad in a uniform color which is then covered by an additional layer of the same clothing before his disappearance. The purpose of the uniform color clothing make-up is to aid the effect of invisibility during the post-production process.

Hollow man stage: This stage will be short but it is a crucial link to the last stage. The man will appear to be translucent before actually disappearing. During this part, match move is again important to synchronize the last actions of the "invisible" man to the model designed to execute the effect of the dropping of garments.

Dropping of garments: The model which we mentioned in the preceding stage is a model created by a collection of recycling plastic bags specially joined together to mimic the shape of the man. Additional soft, elastic materials will be stuffed into the plastic bag model (we decide to call it this way) to boost the shape if we think is necessary. After this model is completed, strings are required to hang the model for the actual execution. Rig removal on the strings is of course mandatory in the post-production. To achieve the final dropping effect, a vacuum cleaner is attached to an end of the plastic bag model. The key purpose of the vacuum cleaner is to extract the air within the plastic bag model within a short period of time. The last effect can then be accomplished.

References

[1] Efficient Rendering of Lightning Taking into Account Scattering Effects due to Clouds and Atmospheric Particles, Dobashi, Yamamoto & Nishita

[2] Physically Based Animation and Rendering of Lightning, Theodore Kim, Ming C. Lin