



# The Magic Glove

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## ■ Effect Overview

We try to demonstrate a hi-tech presenting method without any projector, white board, pen, etc. There will be a semi-transparent “screen” floating in the air for the demonstrator to show something or draw something on.

## ■ Shooting Script and Raw Footage

<i>Scene1</i>	
	A teacher comes into a classroom and will give a class on “ $E=mc^2$ ” formula. He tries to write something on the whiteboard, but the pen is out of ink; he tries to open the projector.
<i>Scene2</i>	
	But the projector doesn't work either.
<i>Scene3</i>	



He tries to find a solution for his lecture presentation, and suddenly, an idea comes across his mind. He slowly takes out a glove from his pocket with a mysterious smile.

#### Scene4

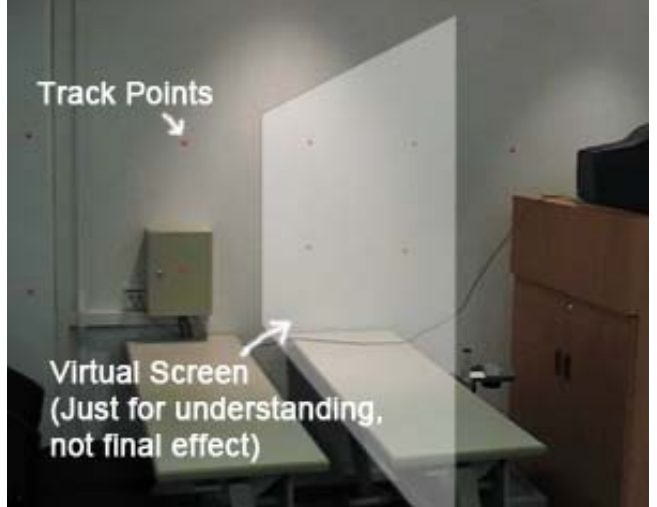


He wears the glove, but the glove appears nothing special.

#### Scene5



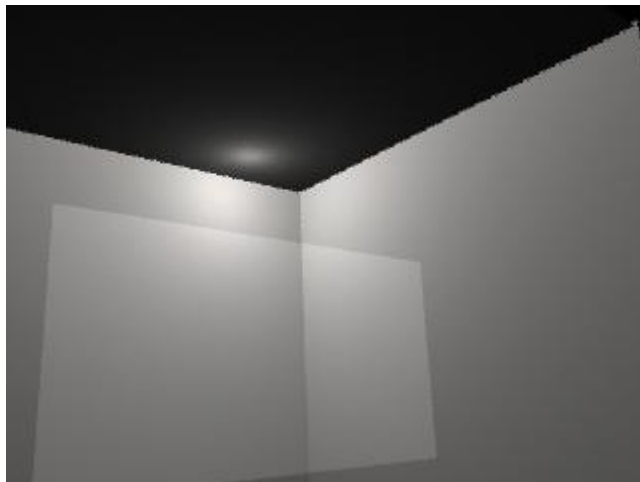
He stretches out his hand with the glove, and a semi-transparent screen slips down in front of him. He finds that the contents on the screen are not what he wants, and removes the screen. Another screen slips down but contents are still not what he expects, and is removed by him again. Finally, the third screen slips down and he smiles with satisfaction.

	and starts to write <u>“E=mc<sup>2</sup>”</u> only with a <u>finger on the virtual screen</u> .
<b>Scene6</b>	
	Camera begins to move <u>around the screen</u> from back side to front side. The last image will lock on the “virtual screen”.

\*The underline parts involve special effect which will be composited with real footage.

## ▪ **Maya Model**

The screen will be created with Maya. To do this we measured the size of the classroom and assessed the position of the screen. The image show the models of classroom and screen rendered in Maya.



## ▪ **Technical Aspect**

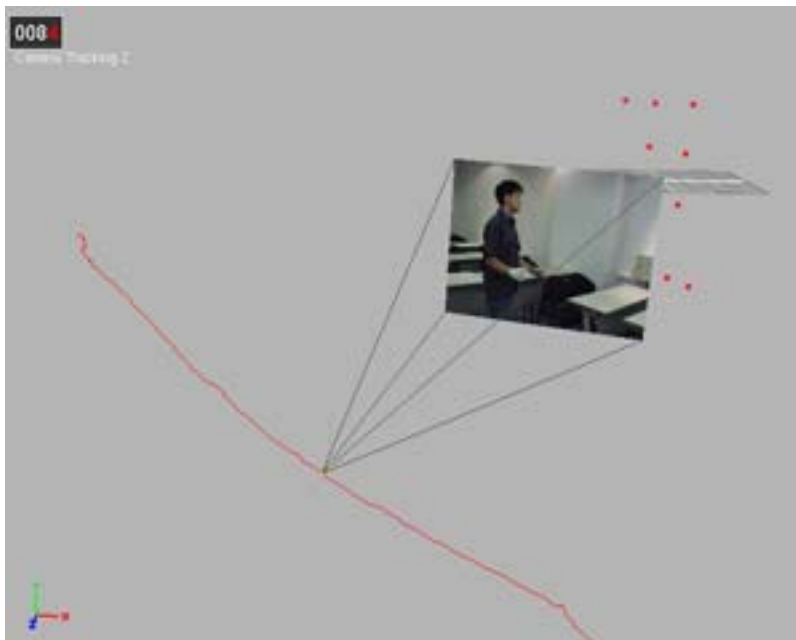
The key issue of making effect in this short movie is the motion tracking of finger and trajectory reconstruction of the camera. In the light of previous survey, we

paste some track points on the finger and other reference object in the environment. These points have sharp color and are easy to be extracted. According the position of these track points, we can compute the motion trajectory of finger and the camera with Kalman Filter or some other ToolKits.

So far, the toolkits we have tried are: Maya Live, MatchMover and Boujou.

After these experiments, we find the tracking results are not as good as we expect. The main reason is that the image quality is too low and the tracking points are too small. So we decide to shoot the footage again with another digital video camera and more and larger tracking points.

Here are some screen shots of Boujou:



## ▪ **Potential Complications**

1. Creating a realistic “virtual screen” could be problematic. We want to make it like glass, but it will require some environment map and reflection which turns out to be too complicated. After all, we will try more materials.
2. How to eliminate the tracking points is also a problem for us now. Masking them one by one will be too boring and time consuming. We will try to develop some algorithms to solve it.