CS 5245 – Vision and Graphics for Special Effect

Project proposal

Group member:

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Project title: Ideal Laptop

Getting 3D objects from a 2D-flat, transparent laptop screen.

Project Description:

In this project, we will shoot a laptop and make it have a transparent screen which is a screen that you can see all computer interface elements (icon, text, button, mouse, etc…) as a normal laptop and even can see the things behind the laptop. With this "transparent screen" laptop, we have 3 ideas of effect:

1. **Touching effect:** We will create a "touching water" effect when a finger is touching the screen. Because the screen is transparent, so it's supposed to be very thin, transparent liquid material. When we touch at a point, there will be circle waves that the center is at the touching point spread out. All the interface elements that a wave goes through also deformed corresponding to the wave effect.
2. **Pulling screen effect:** In this effect, when a person hold and pull the screen, the screen will be deformed and appear wrinkles that converge at the pulling point.
3. **Pulling a can out of screen (main effect):** We have an idea of something called "magical shopping online" that people can get out a real thing from laptop screen. The object first is seen 2D in the screen and when people start to get it out from the screen, it appears 3D (real thing). We will have a camera moving in such a way that it can show the effect in front of the screen as well as showing the things captured behind the screen. In this video, we decided to take a coke and a bowl of very hot noodle so that the smoke is coming up. The hand taking these objects will become 2D in the screen but interact well with objects and can't go through behind the screen. We also choose a very thin screen in a laptop so that the effect can't be done just simply by shooting someone taking an object out of the black box.

Inputs

1. One video as clean plate without laptop (with some human action in the background eg hand reaching for can behind the laptop screen)

2. One video with laptop but screen is covered by blue screen (with interaction of hand with screen)

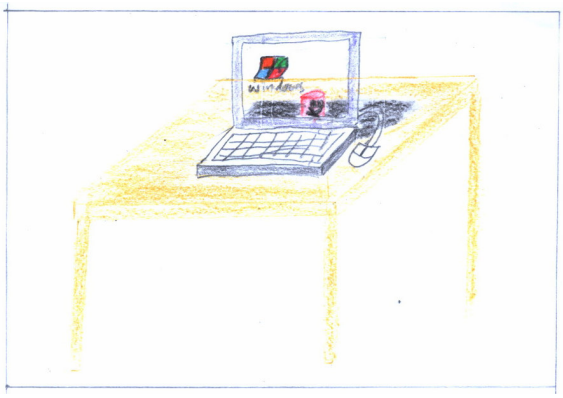
3. Third video of laptop with *application* shown on screen includes screen saver with blue background using Internet explorer to buy a can of coke

4. Particle animation of water effect screen when user touch the screen using Maya

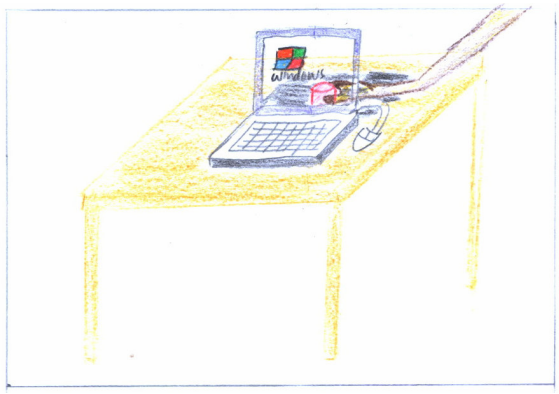
Output

A video sequence with a transparent laptop where user will interact with the screen

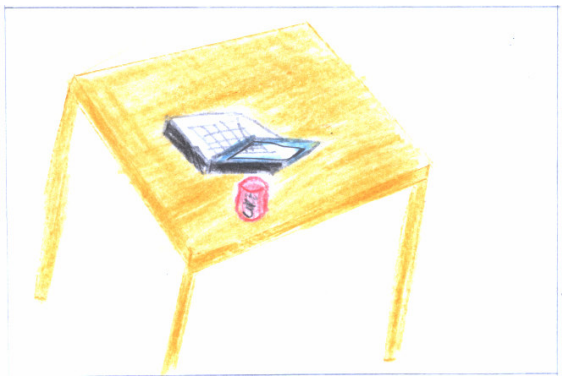
Story board



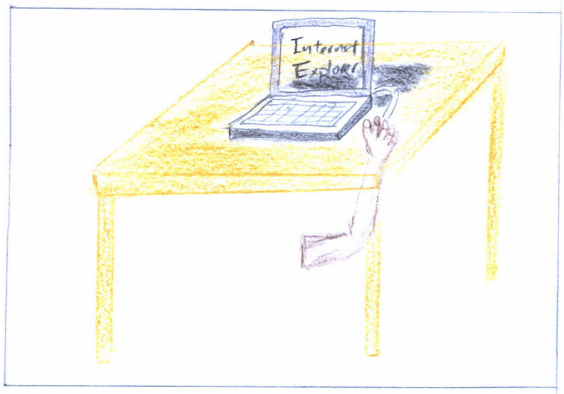
A laptop with transparent screen is place on a table. The laptop will at first show a screen saver with objects behind. A can of coke is place behind the LCD screen.



The can of coke is then taken out of the screen by the user. The hand can be seen behind the screen.



The camera goes to the back and shows the laptop screen transparent from the back.

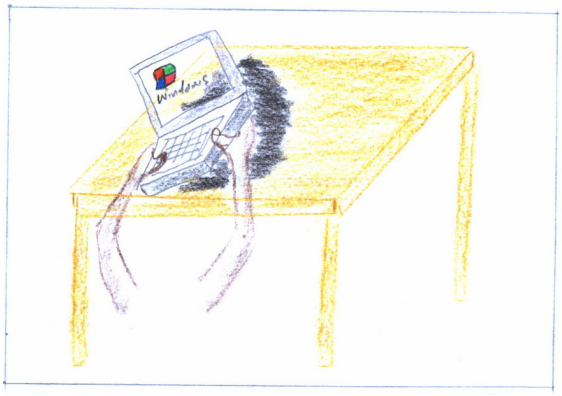


The user uses the laptop by moving the mouse. Opening internet explorer to surf the net.

The user browses a online shop at times using the finger to scroll through the webpage. The LCD screen will show some image distortion when the finger press on it.

The user buys a drink online. The drink appears in front the computer and it looks real. The user takes the drink out from the LCD screen.

The hand is not seen that it does not go through the LCD screen. The camera rotates from the from to the back.



The user then carry the laptop away. The screen is still transparent.

How to do it?

At first, we'll use match move for the camera move.

Image compositing for transparent screen will be done using After effects. To make the laptop screen transparent, we will cover the laptop screen with a blue screen so that we can use difference keying to remove the blue screen and composite it with the clean plate.

To show that the screen is soft (not transparent glass) we'll create a mask to apply to the screen that make it not shiny and reflect so much, also create a feeling of liquid materials.

Particle animation of liquid surface screen when user touch and pull the screen and also when taking a can out of the screen using Maya.

We may need to reconstruct a plane for the laptop screen in Maya according to real world position.

For taking an object out of screen, because when the hand goes into the screen, it become 2D so we will model the hand and do animation for it. And make thing slowly transform from 2D (in the screen) to become 3D (out of the screen), we're probably have to use morphing to make it looks real. Morphing also has to be used for the smoke of the noodle bowl when the bowl is taken out.

Number of Layers

At least 4 layers

1) Original video (clean plate) without laptop.
2) Video with laptop.
3) Video of applications shown on laptop screen.
4) Screen generated in maya with particle effects

Issues to take note

- The lighting background objects within the "transparent screen" should look brighter than original objects not within the screen to give an illusion that the screen is transparent.
- The color of "transparent screen" should be a bit grey transparent to show the material.
- After using difference keying, probably a transparent matte should be placed over the "transparent" screen to give it a realistic look.
- Do the morphing for objects from 2D to 3D only where necessary (such as boundary, smoke)
- Not only take care of the interaction between hand and objects on the screen but also the interaction between hand and the screen itself when the hand start going to the screen.

Task to be done:

- Shoot video: everybody.
- Create transparent screen looking and touching effect: Mai Lan.
- Create pulling screen effect: Jackson.
- Model the laptop, hand and objects in 3D: Liyan.
- Particle animation using Maya: Liyan.
- Match move: Jackson.
- 2D to 3D effect: Mai Lan.
- Compositing: everybody.

Timeline

Week 5: Finalize the script.
Week 6: Shoot video and create the transparent screen.
Week 7: Starting to do touching and pulling screen effect. By the mean time, we'll do the 3D model for the hand so that later we can create interaction effect between the hand and things on the monitor.
Week 8: Progress report due while continue to produce the effect, start to do the taking object out from the screen effect.
Week 9: Finish all the effect.
Week 10: Compositing.
Week 11: Progress report due and continue with compositing.

Week 12: Finish the project with sound.
Week 13: Project Presentation