Project Proposal –Funny Mirrors

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Title

Tentative: "Funny Mirrors"

The effect (summary)

We intend to put a 3d cartoon character into a real world scene (as shown in Fig.1) and make it in front of a mirror. The mirror in the real world will reflect both the real environment and the virtual cartoon character (as shown in Fig.2). Then we try to distort the mirror into funny mirrors (e.g. a concave mirror, a cave mirror, a wave mirror). The reflection of the real world and the moving cartoon character in the mirror will be distorted accordingly (as shown in Fig.3).

Fig. 1 : 3D Cartoon Character in the real scene

Fig. 2 Mirror reflecting the real scene and the 3D cartoon character (taken from the movie 'Garfield')

Fig. 3: Example of the funny mirror and its reflection

Input

One input is a shot of a live scene including a mirror, mainly focusing on the mirror region and the reflection of the mirror. The other input is a 3D model of a cartoon character and its animation we create.

Output

An image sequence of the compositing results showing the 3D character and its animation in the real scene, the reflection of the composited scene in the mirror and its distortion as the mirror distorted.

How many layers? What?

There will be 2 layers: the live shot and the composited, computer-generated images. The second layer may include the perspective view of the 3D cartoon character and its reflection in the mirror, which will be distorted according to the distortion of the mirror.

Story-line

Our 3D cartoon character is tired of the cartoon world he lives in. He pays a visit to the real world today. He is so happy to come to this new world. He walks and dances. Suddenly, he is attracted by something in front of him. What is it? - his reflection in the mirror. He is very surprised to see himself in the mirror, to see what himself likes in this new world. Now the most surprising thing happens. The mirror becomes distorted, and so does all the reflection in the mirror. The cartoon sees himself becoming short and fat in the mirror, after a while, tall and thin. He is frightened. What a terrible mirror, what a terrible world!

Possible ways of doing the project

The 3-D cartoon character and its animation will be modeled in Maya, so is the rough geometrical structure of the scene. A 3-D mirror model will be used. We need to match the 3-D mirror and the

real mirror. Funny mirror effects will be simulated in Maya or Matlab and finally composited with the live scene.

Who will do what

Li Shimiao
∅ **Matlab coding**
∅ **Mirror reflection and distortion**

Shen Weijia
∅ **Shoot the live scene**
∅ **Maya 3d modeling, animation, and texture mapping**
∅ **Camera motion matching**

Hu Chuanxin
∅ **Light and shadow effects**

Everyone
∅ **Image Filtering**
∅ **Compositing**

Timeline

5th week: Pre-production planning, shoot video

6th week-7th week: 3D modeling of the cartoon character and creating the animation, partially implemented mirror reflection of the composited scene

The end of 7th week: progress report due

8th week – 11th week: the distorted mirror and integration

The end of 11th week: Progress update due

12th week: post- production

13th week: presentation and demo