



CS5245 Vision & Graphics for Special Effects

Project Presentation
The Accident

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The Making of The Accident

- Real hand removing
- CG objects
- Morphing
- Real object interacting and refraction casting
- Adjustments

Real hand removing

- The real hand is shot with a green glove on.
- We use color keying to remove the real hand.
 - Problem: the color key affect other area also.
 - Solution: we use a mask to limit the area of the color key.
 - We use multi color key to completely remove the hand.
 - Keyed out area is replace with clean plate.

CG objects

- The 3D hand and skeleton is done using Maya.
- The texture is obtained from real human hand.



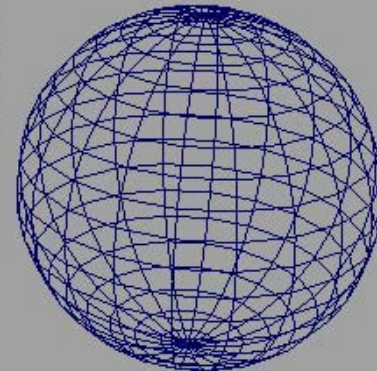
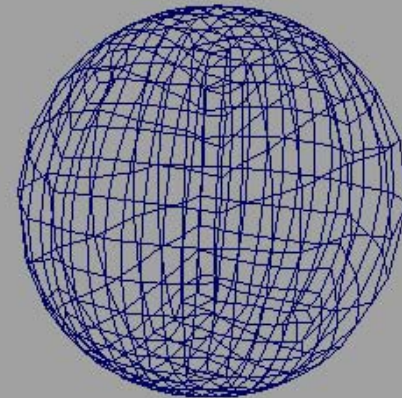
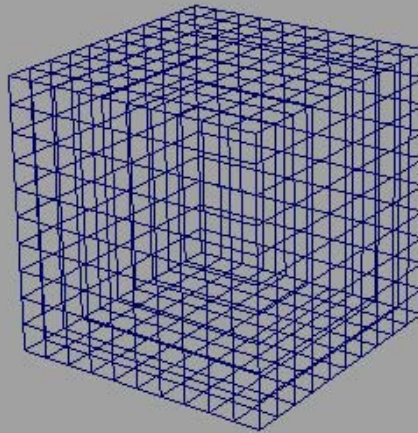
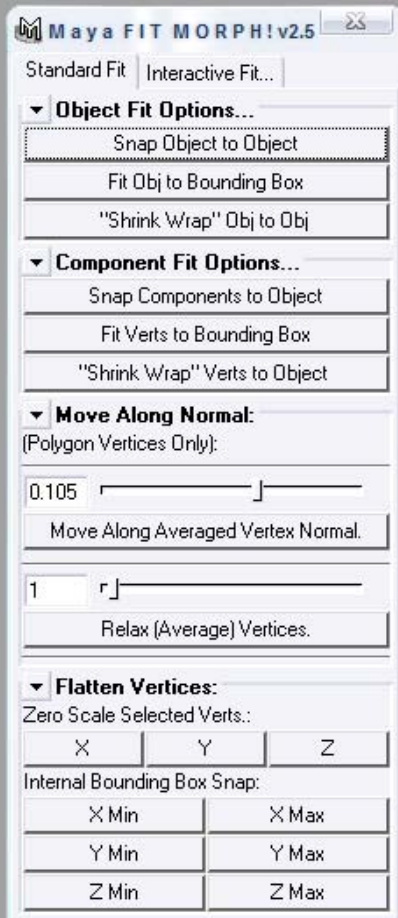
Morphing

- Target: we need to morph from the 2D hand in the footage into the 3D skeleton.
- Solution:
 - First, use 2D morphing from the 2D hand footage into the 2D rendered hand model which looks the same.
 - Then use 3D morphing from the hand model into the skeleton hand.
- Problem:
 - We tried to obtain the 3D model of the human hand from the actor's hand. However, the 3D scanning result is not good enough even with the help of the lab technician.
 - So we skip the 2D morphing and implement the 3D morphing.

Morphing

- Morphing from 3D to 3D in Maya requires same topology.
- The 3D hand and skeleton have different topology.
- We find a tool called FitMorph to solve this problem.
- FitMorph can be used with simpler model in our experiments but when we try to apply to our model, the complexity is too high.
- So we must use other solution.

FitMorph



Morphing

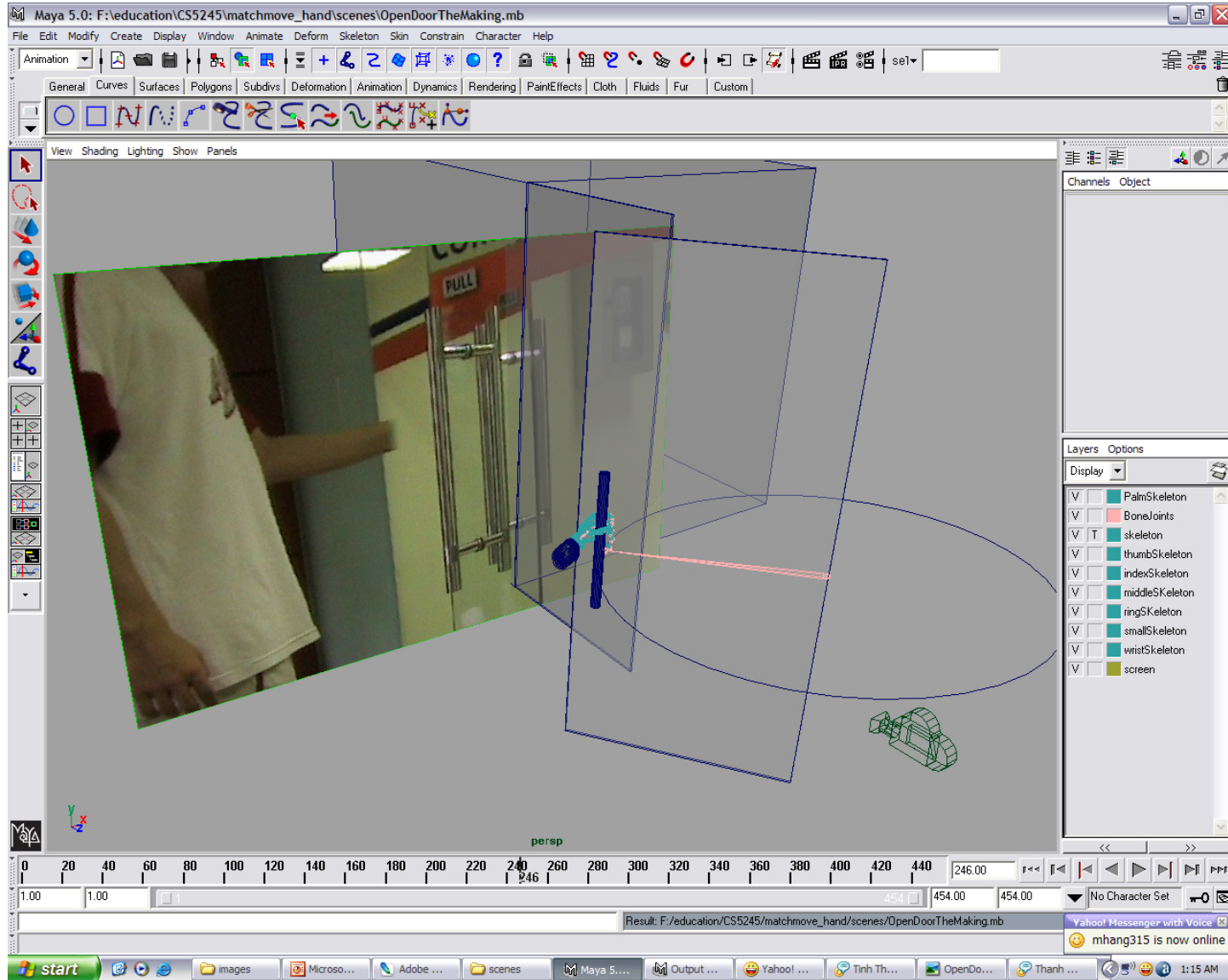
- We create different model of the hand and blend them into one model.
- We use blending to change the model into many different shape and key the change to create morphing sequence.
- The skeleton model is placed inside the hand so that at some stage, the hand morph into the skeleton.



Object interacting & refraction casting

- We simulate the environment with 3D models.
- We let the skeleton interact with the handle model and use the handle to matte the skeleton.
- The reflection of the hand on the handle is rendered and blended on the real footage.

Object interacting & reflection casting



Adjustment

- Rendered 3D model sequences are adjusted using color balance, noise, Gaussian blur for more realistic result because the original footages have noise themselves.