Inspiration

VR

- 2019 AYAHUASCA
- 2019 Afterlife: Combining Branching Narratives With Live Actors In VR
- 2017 Alice - The Virtual Reality Play

Overview UnityTeam Digital Human Rigging & Shading

A general overview of some of the tools and workflows used and applied by the Unity Team for the creation of their state of the art Digital Human, Gawain.

Maya File

Rig

They used two different rig hierarchies. One for the body the other for the head.

Body Rig

Classical full body game rig. Skin weights up to the torso. Corrective blendshapes for the hands and the back.

Head Rig

Combination of Joint hierarchy and over 200 Blendshapes.

Model

Non-deforming body parts like the gum don't have an optimized topology.

All the hair consists of cards. Hair is exported as a separated object and is not part of the head mesh. It's attachment to the deforming mesh happens in Unity.

Unity Files

Attachment Tools

The Unity Team developed a set of very useful tools to attach elements to a deforming mesh in realtime. You can implement those tools in your own project by getting them here.

First an empty dataset is created in the Assets Window. (right click → Digital Human → skin attachment data)

Then in the outliner you select the object you want to have attached to the deforming mesh. Add a 'Skin Attachment Target'-Script to it's Inspector and specify the dataset you just added.

Select the mesh driving the deformation, add a 'Skin Attachment'-Script to its inspector and specify the targets. (This only works if you insert the script after the 'Skinned Mesh Renderer'/'Mesh Renderer')

Go back to the inspector of the target and fill in the dataset with the required mesh information.

As for now these tools only work with meshes being deformed by the GPU.

Shading & Rendering

The skin and eyes are using a dedicated shader connected to a set of dedicated scripts.

The eyes can easily be customized to fit the needs of the required reference model.

We're still looking into the skin shader, particularly the system they applied to blend 82 different textures based on the faceshape.

Links

For further insight into this project, please refer to these links:

Readings

Blog with emphasis on artistic aspects

Blog with emphasis on the technical aspects

Code and Material

Unity Digital Human Assets Unity Digital Human Tools

RealTime PreViz

- 2018 Siren (Unreal) Siren with Actress

- 2018 Reflections (Unreal)
- 2018 ForestScene (Unity)
- 2018 Andy Serkis Face to Face (Unreal)
- 2019 Ted Talk about Digital Humans with real time character

Dance

- 2014 Peking Opera
- 2017 Exisdance (Unity)
- 20xx Huge collection of dance performances

Scenography / Dance

- 2014 HAKANAI by Adrien M / Claire B
- 2018 Dökk (OpenFrameWorks)
- 2019 Das Totale Tanztheater - 100 Jahre Bauhaus - Palais Populaire

Projection Mapping & Dance

- 2014 OMOTE
- 2017 INORI (Prayer) Making-of

Scenography / Theatre & Opera

- 2002 Jude von Malta by Art+Com
- 2010 IAM4Mime
- 2016 Manipulation | Pepper's Ghost
- 2017 The Tempest | Royal Shakespeare Company

Tradeshow examples

- 2017 Dynamic Projection Mapping

Technology

- Why CG sucks / or not (Essay)

AI

- Realtime Face Reenactment
- Image Synthesis through semantic manipulation
- Interactive AI rendered 3d World
- Reconstructing Images
- Tranform Video from Winter to Summer / Day to night
- Reflections on deep fakes
- creative AI in the arts

FilmSets

- Realtime Compositing

Film VFX

- The Social Network VFX Breakdown
- Rachel in Blade Runner 2049
- VFX Oscar Winners from 1929-2018
- The Lion King 2019 - Making Of - How it was filmed in a realistic way

Robotics

- Uncanny Valley/Unheimliches Tal by Stefan Kaegi with robot-avatar as double of the author Thomas Melle
- Why Artists Love the Eerie Sensation of Characters That Look Almost Human

Old Style

Scenography

- Opera Scene change

Film / Animation

- Loving Vincent Making of / Rotoscope
- Loving Vincent Rotoscope Painting in Time Lapse

Companies

- LuxMachina
- Stiller Studios
- Meow Wolf

Volumetric

- Intel Studio

From:
https://wiki.zhdk.ch/IASpace/ - **immersive art space**

Permanent link:
https://wiki.zhdk.ch/IASpace/doku.php?id=inspiration&rev=1599147611

Last update: **2020/09/03 17:40**