

15-464/15-664 Reference List for April 21, 2021

We began by looking at some of the research from Facebook Reality Labs, as presented by Yaser Sheikh in this talk:

Yaser Sheikh, "Metric Telepresence," SIGGRAPH Frontiers Talk, August 1, 2019.
<https://www.youtube.com/watch?v=aIqOwn2APhw>

The following papers discuss in detail the material that we covered:

Wei, Shih-En, Jason Saragih, Tomas Simon, Adam W. Harley, Stephen Lombardi, Michal Perdoch, Alexander Hypes, Dawei Wang, Hernan Badino, and Yaser Sheikh. "VR facial animation via multiview image translation." *ACM Transactions on Graphics (TOG)* 38, no. 4 (2019): 1-16.

<https://research.fb.com/publications/vr-facial-animation-via-multiview-image-translation/>

Lombardi, Stephen, Jason Saragih, Tomas Simon, and Yaser Sheikh. "Deep appearance models for face rendering." *ACM Transactions on Graphics (TOG)* 37, no. 4 (2018): 1-13.

<https://stephenlombardi.github.io/projects/deepappearancemodels/>

<https://research.fb.com/publications/deep-appearance-models-for-face-rendering/>

Schwartz, Gabriel, Shih-En Wei, Te-Li Wang, Stephen Lombardi, Tomas Simon, Jason Saragih, and Yaser Sheikh. "The eyes have it: an integrated eye and face model for photorealistic facial animation." *ACM Transactions on Graphics (TOG)* 39, no. 4 (2020): 91-1.

<https://research.fb.com/publications/the-eyes-have-it-an-integrated-eye-and-face-model-for-photorealistic-facial-animation/>

We then had a quick look at the following paper, which discusses going directly from audio to video.

Thies, Justus, Mohamed Elgharib, Ayush Tewari, Christian Theobalt, and Matthias Nießner. "Neural voice puppetry: Audio-driven facial reenactment." In *European Conference on Computer Vision*, pp. 716-731. Springer, Cham, 2020.

https://www.youtube.com/watch?v=s74_yQiJMXA

This survey on 3D morphable face models is a great resource for gaining an overall view of what has been done in a vast body of research efforts related to morphing a 3D face mesh to produce realistic final renderings.

Egger, Bernhard, William AP Smith, Ayush Tewari, Stefanie Wuhrer, Michael Zollhoefer, Thabo Beeler, Florian Bernard et al. "3d morphable face models—past, present, and future." *ACM Transactions on Graphics (TOG)* 39, no. 5 (2020): 1-38. <https://arxiv.org/pdf/1909.01815.pdf>

The paper is associated with a data and code repository, which can be found here: <https://github.com/3d-morphable-models/curated-list-of-awesome-3D-Morphable-Model-software-and-data>

We then turned to the topic of working in a more conventional animation pipeline. The JALI research we saw in class is covered in the following papers and video.

Edwards, Pif, Chris Landreth, Eugene Fiume, and Karan Singh. "JALI: an animator-centric viseme model for expressive lip synchronization." *ACM Transactions on Graphics (TOG)* 35, no. 4 (2016): 1-11. <http://www.dgp.toronto.edu/~elf/jali.html>

Edwards, Pif, Chris Landreth, Mateusz Popławski, Robert Malinowski, Sarah Watling, Eugene Fiume, and Karan Singh. "JALI-Driven Expressive Facial Animation and Multilingual Speech in Cyberpunk 2077." In *Special Interest Group on Computer Graphics and Interactive Techniques Conference Talks*, pp. 1-2. 2020. <https://dl.acm.org/doi/pdf/10.1145/3388767.3407339>

The talk is here: <https://www.youtube.com/watch?v=uFIxiz0jwRE>

The reference on FACS that we saw in class can be found at this website: <https://imotions.com/blog/facial-action-coding-system/>