

15-464 / 15-664 Reference List for Feb 5, 2020

We started by talking about the sketch based motion editing system “SketchiMo,” which builds on the hierarchical B-spline motion reconstruction technique which we reviewed on Monday to create a more gestural interactive interface for editing motions.

Choi, Byungkuk, Roger Blanco i Ribera, J. P. Lewis, Yeongho Seol, Seokpyo Hong, Haegwang Eom, Sunjin Jung, and Junyong Noh. "SketchiMo: sketch-based motion editing for articulated characters." *ACM Transactions on Graphics (TOG)* 35, no. 4 (2016): 1-12. <https://dl.acm.org/doi/10.1145/2897824.2925970>

In addition to IK-based techniques, filtering techniques can also be used to modify motion capture data. One of the earliest papers showcasing this idea is this one, which attempts to capture anticipation and follow-through, and/or squash and stretch:

Wang, Jue, Steven M. Drucker, Maneesh Agrawala, and Michael F. Cohen. "The cartoon animation filter." *ACM Transactions on Graphics (TOG)* 25, no. 3 (2006): 1169-1173. <https://dl.acm.org/doi/abs/10.1145/1141911.1142010>

This lecture has a slide that goes through in detail the 1D Laplacian of Gaussian, which we discussed in class how to convert to a filter.

http://www.cse.psu.edu/~rtc12/CSE486/lecture11_6pp.pdf

The following paper highlights a family of filters, or “amplifiers,” all designed to be layered onto a motion to add additional traditional animation techniques such as slow-in / slow-out, secondary motion, arc following, and dynamic lines of action.

Kazi, Rubaiat Habib, Tovi Grossman, Nobuyuki Umetani, and George Fitzmaurice. "Motion amplifiers: sketching dynamic illustrations using the principles of 2D animation." In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, pp. 4599-4609. 2016. <https://dl.acm.org/doi/abs/10.1145/2851581.2889433>

Finally, we looked at the state of the art in using neural networks to capture character behavior including locomotion, sitting, stepping, and carrying behaviors.

Starke, Sebastian, He Zhang, Taku Komura, and Jun Saito. "Neural state machine for character-scene interactions." *ACM Transactions on Graphics (TOG)* 38, no. 6 (2019): 1-14. <https://dl.acm.org/doi/10.1145/3355089.3356505>