

## 15-464/15-664 Reference List for April 10, 2017

Before I list the papers that I discussed in class, let me mention that this reference is very thorough, and contains a great deal of background material up to 2011:

Geijtenbeek, Thomas, Nicolas Pronost, Arjan Egges, and Mark H. Overmars. "Interactive character animation using simulated physics." *Eurographics-state of the art reports 2* (2011).

<http://www.cs.uu.nl/docs/vakken/mgp/literature/Interactive%20Character%20Animation%20Using%20Simulated%20Physics%20-%20A%20State-of-the-Art%20Review.pdf>

We began by talking about state machine based control, beginning with papers from the 90's:

Raibert, Marc H., and Jessica K. Hodgins. "Animation of dynamic legged locomotion." In *ACM SIGGRAPH Computer Graphics*, vol. 25, no. 4, pp. 349-358. ACM, 1991.

<http://dl.acm.org/citation.cfm?id=122755&dl=ACM&coll=DL&CFID=657285216&CFTOKEN=27654732>

Jessica K. Hodgins, Wayne L. Wooten, David C. Brogan, and James F. O'Brien. 1995. Animating human athletics. In *Proceedings of the 22nd annual conference on Computer graphics and interactive techniques* (SIGGRAPH '95), Susan G. Mair and Robert Cook (Eds.). ACM, New York, NY, USA, 71-78.

DOI=10.1145/218380.218414 <http://doi.acm.org/10.1145/218380.218414>

Yin, KangKang, Kevin Loken, and Michiel van de Panne. "Simbicon: Simple biped locomotion control." In *ACM Transactions on Graphics (TOG)*, vol. 26, no. 3, p. 105. ACM, 2007.

<http://www.cs.ubc.ca/~van/papers/Simbicon.htm>

Coros, Stelian, Philippe Beaudoin, and Michiel van de Panne. "Generalized biped walking control." *ACM Transactions on Graphics (TOG)*. Vol. 29. No. 4. ACM, 2010. <http://www.cs.ubc.ca/~van/papers/2010-TOG-gbwc/>

Coros, Stelian, et al. "Locomotion skills for simulated quadrupeds." *ACM Transactions on Graphics (TOG)*. Vol. 30. No. 4. ACM, 2011. <http://www.cs.ubc.ca/~van/papers/2011-TOG-quadruped/index.html>

We then moved on to the topics of motion optimization, and adding muscles to give the character's movement a more biological base.

Wang, Jack M., David J. Fleet, and Aaron Hertzmann. "Optimizing walking controllers." *ACM Transactions on Graphics (TOG)* 28.5 (2009): 168. <http://www.dgp.toronto.edu/~jmwang/optwalk/>

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Wang, Jack M., David J. Fleet, and Aaron Hertzmann. "Optimizing walking controllers for uncertain inputs and environments." *ACM Transactions on Graphics (TOG)*. Vol. 29. No. 4. ACM, 2010.

<http://www.dgp.toronto.edu/~jmwang/optuie/>

Wang, Jack M., et al. "Optimizing locomotion controllers using biologically-based actuators and objectives." *ACM transactions on graphics* 31.4 (2012). <http://vladlen.info/publications/optimizing-locomotion-controllers-using-biologically-based-actuators-and-objectives/>

Geijtenbeek, Thomas, Michiel van de Panne, and A. Frank van der Stappen. "Flexible muscle-based locomotion for bipedal creatures." *ACM Transactions on Graphics (TOG)* 32, no. 6 (2013): 206.

<http://www.cs.ubc.ca/~van/papers/2013-TOG-MuscleBasedBipeds/index.html>

One breakthrough in motion optimization was to allow contacts to vary, creating a smooth objective function by allowing forces to be generated (with penalty) even when contact had not yet been achieved.

Mordatch, Igor, Emanuel Todorov, and Zoran Popović. "Discovery of complex behaviors through contact-invariant optimization." *ACM Transactions on Graphics (TOG)* 31.4 (2012): 43.

<http://dl.acm.org/citation.cfm?id=2185539>

Mordatch, Igor, et al. "Animating human lower limbs using contact-invariant optimization." *ACM Transactions on Graphics (TOG)* 32.6 (2013): 203. <http://vladlen.info/publications/animating-human-lower-limbs-using-contact-invariant-optimization/>

Finally, we discussed three papers that use machine learning in different ways to achieve optimal motions for characters. The first paper has its focus on real-time character reaction and control.

Hämäläinen, Perttu, et al. "Online motion synthesis using sequential monte carlo." *ACM Transactions on Graphics (TOG)* 33.4 (2014): 51. <https://mediatech.aalto.fi/publications/graphics/OnlineSMC/>

Tan J, Gu Y, Liu CK, Turk G. Learning bicycle stunts. *ACM Transactions on Graphics (TOG)*. 2014 Jul 27;33(4):50. <http://dl.acm.org/citation.cfm?id=2601121>

Wampler, Kevin, Zoran Popović, and Jovan Popović. "Generalizing locomotion style to new animals with inverse optimal regression." *ACM Transactions on Graphics (TOG)* 33.4 (2014): 49.

[http://grail.cs.washington.edu/projects/inverse\\_locomotion/](http://grail.cs.washington.edu/projects/inverse_locomotion/)

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