References for 15-869 Feb 4, 2014

There is an upcoming workshop “Computational Contact Mechanics: Advances and Frontiers in Modeling Contact” http://www.birs.ca/events/2014/5-day-workshops/14w5147

“Modeling the complexities of contacting behavior is an outstanding computational challenge…”

David Harmon’s thesis has an excellent background section. See chapters 2 and 3. If you are very ambitious, you can also read the rest ☺

Harmon, David. "Robust, efficient, and accurate contact algorithms." PhD Dissertation, Columbia University (2010). http://www.cs.columbia.edu/cg/pdfs/HarmonThesis.pdf

There is a SIGGRAPH 2009 paper and code available related to a portion of the thesis: http://www.cs.columbia.edu/cg/ACM/

This reference walks through one technique for solving LCP problems and is fairly easy to understand geometrically.

Baraff, David. "**Fast contact force computation for nonpenetrating rigid bodies**." In *Proceedings of the 21st annual conference on Computer graphics and interactive techniques*, pp. 23-34. ACM, 1994. http://www.cs.cmu.edu/~baraff/papers/sig94.pdf

For a treatment of contact constraints using Lagrange multipliers for humanlike characters, check out Equation 8 in the paper below. I will try to put this in the context of our overall discussion about contact handling in class.

Liu, C. Karen, Aaron Hertzmann, and Zoran Popović. "**Learning physics-based motion style with nonlinear inverse optimization**." In *ACM Transactions on Graphics (TOG)*, vol. 24, no. 3, pp. 1071-1081. ACM, 2005. http://grail.cs.washington.edu/projects/charanim/paper0129_final.pdf