

16-899: Reference list for Wednesday, Jan 27th

To get an idea of the design process of the Stanford/JPL hand, we looked at the following paper (see link on piazza):

Salisbury JK, Craig JJ. Articulated hands force control and kinematic issues. The International journal of Robotics research. 1982 Mar 1;1(1):4-17.

.. and Chapter 9 of this book (available as a pdf on piazza).

Mason MT, Salisbury Jr JK. Robot hands and the mechanics of manipulation, MIT Press, 1985.

To shed some light on the N+1 vs. 2N tendon design issue, we also had a look at the following paper:

Inouye JM, Valero-Cuevas FJ. Computational Optimization and Experimental Evaluation of Grasp Quality for Tendon-Driven Hands Subject to Design Constraints. Journal of Mechanical Design. 2014 Feb 1;136(2):021009.

http://bbdl.usc.edu/papers/GraspASME_Mech_Design.pdf

If you are interested to follow up on exactly how grasp quality was calculated and how the set of force vectors were determined, I recommend the following references, from which we had a look at some of the images. These papers are very clear and step-by-step:

Inouye JM, Kutch JJ, Valero-Cuevas FJ. A novel synthesis of computational approaches enables optimization of grasp quality of tendon-driven hands. Robotics, IEEE Transactions on. 2012 Aug;28(4):958-66.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3546350/>

Valero-Cuevas FJ. A mathematical approach to the mechanical capabilities of limbs and fingers. InProgress in Motor Control 2009 Jan 1 (pp. 619-633). Springer US.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2839389/>

Francisco Valero-Cuevas actually has a very nice intro book available online that you may want to check out.

Valero-Cuevas, Francisco J. "Fundamentals of Neuromechanics." (2015).

<http://link.springer.com/book/10.1007/978-1-4471-6747-1>