

## 16-848 Spring 2020: Reference List for March 30

We began with a quick look at a couple of explorations into some previous work that my students and I had done with robot and human reactive grasping some time ago:

Koonjul, Gurdayal S., Garth J. Zeglin, and Nancy S. Pollard. "Measuring contact points from displacements with a compliant, articulated robot hand." In *2011 IEEE International Conference on Robotics and Automation*, pp. 489-495. IEEE, 2011.  
<https://ieeexplore.ieee.org/abstract/document/5980463>

Illing, Boris, Tamim Asfour, and Nancy S. Pollard. "Changing pre-grasp strategies with increasing object location uncertainty." In *2014 IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 2468-2475. IEEE, 2014.  
<https://ieeexplore.ieee.org/abstract/document/6942898>

Kazemi, Moslem, Jean-Sebastien Valois, J. Andrew Bagnell, and Nancy Pollard. "Human-inspired force compliant grasping primitives." *Autonomous Robots* 37, no. 2 (2014): 209-225. <https://link.springer.com/article/10.1007/s10514-014-9389-9>  
<https://sites.google.com/site/moslemk/home/force-compliant-grasping-primitives>

We then looked at a follow-up paper related to Paulo's talk last Wednesday:

Della Santina, Cosimo, Visar Arapi, Giuseppe Averta, Francesca Damiani, Gaia Fiore, Alessandro Settimi, Manuel G. Catalano, Davide Bacciu, Antonio Bicchi, and Matteo Bianchi. "Learning from humans how to grasp: a data-driven architecture for autonomous grasping with anthropomorphic soft hands." *IEEE Robotics and Automation Letters* 4, no. 2 (2019): 1533-1540.  
<https://ieeexplore.ieee.org/abstract/document/8629968>  
<https://www.youtube.com/watch?v=tFTw1Q3fhRw>

We then turned to grip stabilization with this article by Jan Peters, which has the hypothesis that stabilization can be done even when each finger acts independently.

Veiga, Filipe, Benoni Edin, and Jan Peters. "Grip Stabilization through Independent Finger Tactile Feedback Control." *Sensors* 20, no. 6 (2020): 1748.  
<https://www.mdpi.com/1424-8220/20/6/1748>  
[www.youtube.com/watch?v=43uIwiFZ4I0](https://www.youtube.com/watch?v=43uIwiFZ4I0)  
<https://www.youtube.com/watch?v=0wj3RWXyOCk>  
[www.youtube.com/watch?v=sEI3uud9wgg](https://www.youtube.com/watch?v=sEI3uud9wgg)

This and many other stabilization / slip avoidance papers are motivated by some of the very famous research of Roland Johansson, such as this 1993 publication:

JOHANSSON, RS, and BB EDIN. "Predictive feed-forward sensory control during grasping and manipulation in man." *Biomedical research* 14 (1993): 95-106.  
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.567.475&rep=rep1&type=pdf>

This paper shows a little bit more daring process of transitioning fingers between different finger patches when necessary to stabilize a grasp, e.g., to handle changing conditions.

Hang, Kaiyu, Miao Li, Johannes A. Stork, Yasemin Bekiroglu, Florian T. Pokorny, Aude Billard, and Danica Kragic. "Hierarchical fingertip space: A unified framework for grasp planning and in-hand grasp adaptation." *IEEE Transactions on robotics* 32, no. 4 (2016): 960-972. <https://ieeexplore.ieee.org/abstract/document/7530865>  
<https://www.youtube.com/watch?v=-W-kRtgC6o0>

This paper shows manipulation with rigid hands featuring GelSight sensors.

Hogan, Francois R., Jose Ballester, Siyuan Dong, and Alberto Rodriguez. "Tactile dexterity: Manipulation primitives with tactile feedback." *arXiv preprint arXiv:2002.03236* (2020). <https://arxiv.org/abs/2002.03236>