References for 16-848 for February 12, 2020

I began by talking about Russian scientist Nikolai Bernstein https://en.wikipedia.org/wiki/Nikolai_Bernstein

If you find his ideas interesting, you may want to have a look at this book:


I then mentioned the overview produced by the European project “The Hand Embodied.” I found this survey to be very informative.


We then discussed three papers.

The first attempts to use fMRI to determine whether the brain encodes synergies in the way we think about synergies.


The second paper described EMG control of a prosthetic hand (an ILimb hand) using 10 EMG signals, which is far more than the usual prosthetic device. One of the techniques used to make this possible was to focus on four functional grasps: a precision grasp, a power grasp, pointing with the index finger, and grasping a credit card using a lateral grasp.

The third paper described using Jacobian transpose control to control the Schunk 9DoF hand in a 3DoF synergy space.


The same author has also explored reinforcement learning in synergy space. The paper is here:

https://www.youtube.com/watch?v=t08yKwcm1js

While searching, I also found that she had published this recent interesting survey: