

Mechanical Engineering Lecture in Robotics

Reengineering the Hand: "Mechanical Intelligence" in Robotic Manipulation



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Despite decades of research, current robotic systems are unable to reliably grasp and manipulate a wide range of unstructured objects in human environments. The somewhat traditional approach of attempting to copy the immense mechanical complexity of the human hand in a stiff "robotic" mechanism, and the subsequently required levels of sensing and control, has not yet been successful. Alternatively, with careful attention to the design of the mechanics of hands, including adaptive underactuated transmissions and carefully tuned compliance, we have been able to achieve a level of dexterity and reliability as yet unseen in the field. I will describe ongoing efforts to further develop grasping and dexterous manipulation capabilities in robotics and prosthetics applications, as well as touch upon work in tangential areas such as human manipulation and biomechanics.

Refreshments will be served before the seminar.
Please contact Tony Pulsone at pulsone@mit.edu with any questions.