

Robotic Grasp Control using Tactile Feedback

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Abstract

As we move towards more autonomous robots, object interaction and manipulation remains difficult for robots. Grasping approaches vary from learning-based to traditional control means, each with their own challenges. Learning-based methods perform well on specific tasks, but struggle to move to other tasks. Approaches using control require a thorough predetermined model, which is not feasible for all tasks. Humans mastered dexterous manipulation and tool use through millions of years of evolution. What can we learn from human capabilities? We provide background in robotics and human inspiration necessary for a grasp controller using only tactile sensing on a robot. This controller encodes the whole pick-and-place operation, from grasp initiation to careful placement. We detail the implementation of the controller and provide insights to improvement by extracting events from sensory data. We present our work as a key step towards making dexterous robots.