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Data-Driven Grasping

Collecting grasp data for learning and benchmarking purposes is very expensive. It would be helpful to have a standard database of graspable objects, along with a set of stable grasps for each object.

In this work we show how to automate the construction of such a database consisting of several hands, thousands of objects, and hundreds of thousands of grasps. To grasp a novel object, we can index into this database of known 3D models and use precomputed grasp data for those models to suggest a new grasp. We refer to this idea as data-driven grasping. In this talk we describe a data-driven grasp planner that requires only partial 3D data of an object in order to grasp it. To achieve this, we describe a new shape descriptor for partial 3D range data, along with an alignment method that can rigidly register partial 3D models to models that are globally similar but not identical.