In this paper, we propose a complete pipeline which can analyse complex cluttered objects scenario and infer the support relations between objects in a recursive methodology, which is called ``broadcasting’’. The video shown above demonstrates the inference process, which is comprised by multi-step broadcast until automatically convergence. Simulation and real world experiments demonstrate that our pipeline help robots to gain deep physics understanding for such complicated scenes and show safe and efficient manipulation performance.

This figure show a variety of scenarios which contain cluttered objects. Retrieving a specific object in these scenarios requires robots to understand the physics structure and manipulation in a feasible path. Otherwise the supported objects will fall down and cause damage since the fragile material.