Assembly Task Design and Modeling for Robot Simulation

Robotics research can be greatly accelerated if algorithms that are tested in simulation can be then reliably applied in the physical world. In order to achieve this transition for manipulation tasks, such as pick-and-place or assembly tasks, the simulation environment must behave realistically and represent objects similar to those found in the real world.

The goal of this project is to design such simulation environments for testing and benchmarking robot algorithms focusing on assembly tasks. This requires

1. Designing tasks for real-world applications
2. Creating new object models.

In addition to design skills, you will gain an understanding of real-world assembly operations as found in manufacturing, adapting them to the capabilities of the robot manipulator. The platform you will use is the Rethink Robotics Baxter. You will have access to a physical Baxter robot to deploy your designs. The simulation environment will be provided, it is custom code similar to Gazebo.

Requirements: ROS Unified Robot Description Format (URDF), 3D model design, C++

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Credits: 2-3
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