Input Data

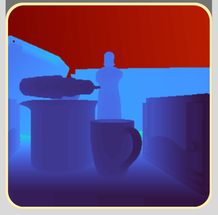
Target Prompt

"blue detergent"

RGB Sensor Data



Depth Sensor Data



Target Object Detection

Grounded SAM2

GDino Bounding Box



SAM2 Mask



Object perception and segmentation

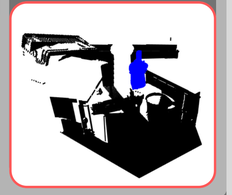
Pointcloud Generation

Isaac ROS Nvblox

Target



Environment



Pointcloud generation by depth backprojection

MGPC and PoinTr

Synthetic Pointcloud

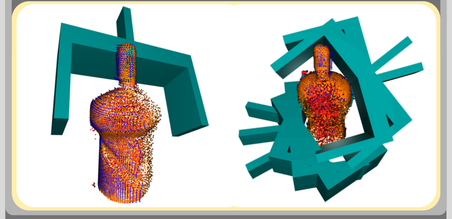


Object shape estimation

Grasp Pose Selection

GPG - Grasp Pose Generator

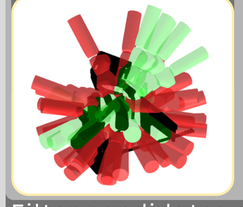
Candidates



Antipodal grasp poses sampling and generation

Grasp Pose Selection

Collision Filter



Selected Pose

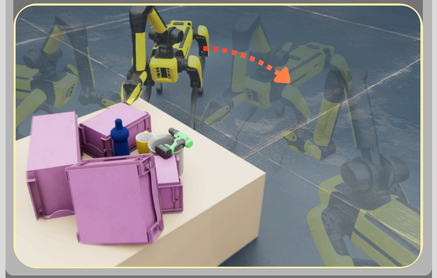


Filter candidates coliding with nearby points and computes their score

Robot Operation

Relative Position Checking

Locomotion



Defines robot pose

Grasp Execution

Aproach and Grasp



End-effector movement and object manipulation