Robot Manipulation
Optimal inverse reachability
Experimental Setup & Methodology

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1 Description of the platform

- **Robot**: Youbot[1]
- **Computer running the software**: Internal PC of youbot with replaced Intel Core i5 processor.
- **Camera**: RGB-D camera (Intel Realsense F200)
- **Objects**: at work objects (Nuts, Bolts, Bearing, F20)
- **Surface**: at work workspaces
- **Software**:
  - **Perception**: `mcr_object_recognition_bounding_box` from b-it-bots mas_common_robotics[2]
  - **Manipulation**: `mcr_moveit_client` in b-it-bots mas_common_robotics[2]
  - **Navigation**: `mir_2dnav` in b-it-bots in mas_industrial_robotics[3]

2 Evaluation Procedure

- **Time**: We evaluate the approach based on Δt, where Δt is the time taken by the approach to compute the pose of the robot to manipulate the objects, once those location of the objects is determined.
- **Number of object**: We evaluate the approach based on the number of objects that the approach can computationally handle.
- **Number of base pose**: We evaluate the approach based on the number of objects that the robot can manipulate in one distinct base pose.

3 Ground truth

- Preception, manipulation and navigation stack works as expected.
- The reachability of the gripper to the object is same as manipulability of that object.
- The locations of the objects received by the approach remain static till it is manipulated.

References

[1] Youbot description

[2] MAS common robotics

[3] MAS industrial robotics