Simulation Env · **Diverse 3D Assets** · **Heterogeneous Robots** · **Task Templates** · **Prior Knowledge**

Task List:
1. Take a look around the *refrigerator* and carefully *check* its surroundings for any misplaced items.
2. *Clean* the *tomato* at the sink, then *deliver* it into the *bowl* for preparation.
3. *Collect* the *knife* and *fork* at the work area, and *place* them neatly into the *plate* to finish cleaning.
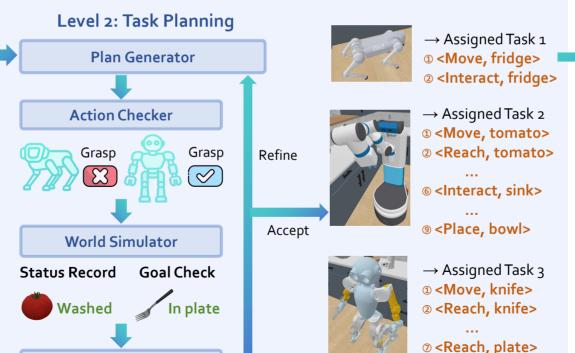
DFD · HD · RMSE · Step · Accuracy
Metrics

Data Collection

Level 1: Agent Activation

Task Allocator

Quadruped Dog
Highly mobile.
Good for **Task 1**

Stompy Humanoid
Dual-arm.
Ideal for **Tasks 2 & 3**

Fixed Arm
No suitable tasks
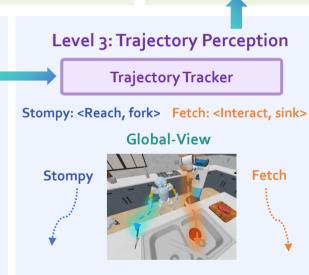
Fetch (Wheeled Arm)
Mobile manipulator.
Useful for **Task 2 & 3**

Constraint Checker

Level 2: Task Planning

Plan Generator

Action Checker

Grasp ✗   Grasp ✓

World Simulator

Status Record   **Goal Check**
Washed   In plate

Plan Refiner

Refine / Accept

→ Assigned Task 1
① <Move, fridge>
② <Interact, fridge>

→ Assigned Task 2
① <Move, tomato>
② <Reach, tomato>
...
⑥ <Interact, sink>
...
⑨ <Place, bowl>

→ Assigned Task 3
① <Move, knife>
② <Reach, knife>
...
⑦ <Reach, plate>
⑧ <Place, plate>

Level 3: Trajectory Perception

Trajectory Tracker

Stompy: <Reach, fork>   Fetch: <Interact, sink>

Global-View
Stompy   Fetch

Ego-View (Stompy)   **Ego-View (Fetch)**