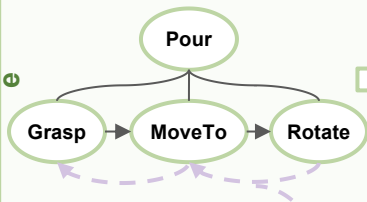


Offlin

Meta Skill Example



Predefined Schema

```

{ "skill": "Grasp",
  "contract": { "keypoints": ["grasp_left", "grasp_right"],
    "normal_constraint": "<fill>" },
  "motion": [
    { "name": "pregrasp2", "relative_to": "pregrasp1", "along": "world_up",
      "scale": "object_height", "offset": "<fill>", "tolerance": "<fill>" },
    { "name": "pregrasp1", "target": "grasp", "along": "approach_normal",
      "scale": "object_width", "offset": "<fill>", "tolerance": "<fill>" } ] }
  
```

Contract Schema

Skill Schema

Adapt

Object Information



$\kappa(x)$



Contract Agent

Skill Agent

Filled Example

```

{ "skill": "Grasp(cup)", "role": "within Pour",
  "contract": {
    "grasp_left": "A contact point on the left side of the cup's outer body, halfway between the rim and base, away from the handle and obstacles, and opposite grasp_right for stable lifting and pouring.",
    "grasp_right": "A contact point on the right side of the cup's outer body, opposite grasp_left at the same height, away from the rim, base, and handle, forming opposing contacts for a stable parallel-jaw grasp.",
    "normal_constraint": "horizontal" },
  "motion": [
    { "stage": "pregrasp2", "offset": "medium", "tolerance": "loose" },
    { "stage": "pregrasp1", "offset": "close", "tolerance": "moderate" } ] }
  
```

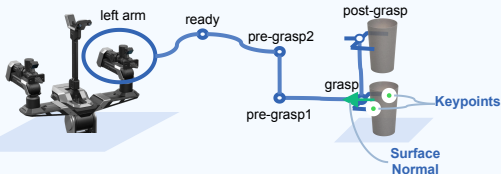
Filled Contract

Filled Skill

Runtime Scene



Example of Grasp



Online