

AdaptBot: Supplementary Material

Contents

1	Question asked during Knowledge Expansion	2
1.1	Question asked for unknown action	2
1.2	Question asked for unknown item	2
2	Classes of Tasks	4
3	Results for other LLMs	6

1 Question asked during Knowledge Expansion

1.1 Question asked for unknown action

Revising action name.

- **Robot:** I do not know how to execute action '*place*', am I mistaking it for another action? Please answer in 'Yes' or 'No'.
- **Human:** Yes
- **Robot:** Please revise the action name
- **Human:** put_down_obj

```
pick_up_obj ("apple", "initial_state.ttl")
put_down_obj ("apple", "sink")
clean ("apple", "updated_state.ttl")
pick_up_obj ("apple", "updated_state.ttl")
put_down_obj ("apple", "countertop")
pick_up_tool ("knife", "updated_state.ttl")
slice ("apple", "knife", "updated_state.ttl")
put_down_tool ("knife", "countertop")
pick_up_rec ("plate", "updated_state.ttl")
put_down_rec ("plate", "countertop")
place ("sliced_apple", "plate")
```



```
pick_up_obj ("apple", "initial_state.ttl")
put_down_obj ("apple", "sink")
clean ("apple", "updated_state.ttl")
pick_up_obj ("apple", "updated_state.ttl")
put_down_obj ("apple", "countertop")
pick_up_tool ("knife", "updated_state.ttl")
slice ("apple", "knife", "updated_state.ttl")
put_down_tool ("knife", "countertop")
pick_up_rec ("plate", "updated_state.ttl")
put_down_rec ("plate", "countertop")
put_down_obj ("sliced_apple", "plate")
```

Removing unexecutable action.

- **Robot:** I do not know how to execute action '*squeeze*', am I mistaking it for another action? Please answer in 'Yes' or 'No'.
- **Human:** No

```
pick_up_rec ("glass", "initial_state.ttl")
put_down_rec ("glass", "countertop")
pick_up_object ("water", "updated_state.ttl")
put_down_object ("water", "glass")
pick_up_object ("lemon", "updated_state.ttl")
squeeze ("lemon", "glass")
```



```
pick_up_rec ("glass", "initial_state.ttl")
put_down_rec ("glass", "countertop")
pick_up_object ("water", "updated_state.ttl")
put_down_object ("water", "glass")
pick_up_object ("lemon", "updated_state.ttl")
```

Agent skips the action when it is not executable.

1.2 Question asked for unknown item

Adding an item to G_s and G_k .

Example 1 - Adding *mango* to KG

- **Robot:** Item '*mango*' is not present in my knowledge base. Is it present in the environment? Please answer in 'Yes' or 'No'. If I am mistaking it for another item, please enter 'correct_item'.
- **Human:** Yes.
- **Robot:** What kind of item is '*mango*'? Choose from: 'edible_object', 'receptacle', 'tool'.

- **Human:** `edible_object`
- **Robot:** What is the location of the object?
- **Human:** Fridge
- **Robot:** Is it sliceable? Please answer in 'True' or 'False'.
- **Human:** True
- **Robot:** Is it boilable? Please answer in 'True' or 'False'.
- **Human:** False
- **Robot:** Is it fryable? Please answer in 'True' or 'False'.
- **Human:** False
- **Robot:** Does this object needs cleaning? Please answer in 'True' or 'False'.
- **Human:** True

Example 2 - Adding *bowl* to KG

- **Robot:** Item '*bowl*' is not present in my knowledge base. Is it present in the environment? Please answer in 'Yes' or 'No'. If I am mistaking it for another item, please enter 'correct_item'.
- **Human:** Yes.
- **Robot:** What kind of item is '*bowl*'? Choose from: '`edible_object`', '`receptacle`', '`tool`'.
- **Human:** `receptacle`
- **Robot:** What is the location of the object?
- **Human:** Cabinet
- **Robot:** Is receptacle sensitive? Please answer in 'True' or 'False'.
- **Human:** True
- **Robot:** Can this receptacle be used for slicing on? Please answer in 'True' or 'False'.
- **Human:** False
- **Robot:** Does this receptacle needs cleaning? Please answer in 'True' or 'False'.
- **Human:** True

Example 3 - Adding *fork* to KG

- **Robot:** Item '*fork*' is not present in my knowledge base. Is it present in the environment? Please answer in 'Yes' or 'No'. If I am mistaking it for another item, please enter 'correct_item'.
- **Human:** Yes.
- **Robot:** What kind of item is '*fork*'? Choose from: '`edible_object`', '`receptacle`', '`tool`'.
- **Human:** `tool`

- **Robot:** What is the location of the object?
- **Human:** rack
- **Robot:** Is it a slicing tool? Please answer in 'True' or 'False'.
- **Human:** False
- **Robot:** Does this tool needs cleaning? Please answer in 'True' or 'False'.
- **Human:** True

Revising the item name.

- **Robot:** Item '*sauce*' is not present in my knowledge base. Is it present in the environment? Please answer in 'Yes' or 'No'. If I am mistaking it for another item, please enter 'correct_item'.
- **Human:** correct_item.
- **Robot:** Please revise the object name.
- **Human:** ketchup

Item isn't present in the environment.

- **Robot:** Item '*grapes*' is not present in my knowledge base. Is it present in the environment? Please answer in 'Yes' or 'No'. If I am mistaking it for another item, please enter 'correct_item'.
- **Human:** No.



Agent skips the action when item is not available.

2 Classes of Tasks

In order to evaluate the ability of our framework to adapt to different classes of tasks, we considered cooking and cleaning tasks. We considered 30 different cooking tasks in a kitchen; These tasks were created by randomly sampling from the Recipe1M+ dataset¹. In addition, we considered 12 variants of cleaning/clearing tasks that involved the agent cleaning specific objects or surfaces or arranging objects in desired configurations in particular rooms.

¹<https://paperswithcode.com/dataset/recipe1m-1>

Recipes sampled from Recipe1M+ dataset

- chocolate cookies
- peanut butter cookies
- italian burger
- bbq crunch burger
- mac and cheese burger
- onion sandwich
- mushroom sandwich
- chicken salad sandwich
- french toast sandwich
- tomato soup
- cucumber salad
- greek salad
- peppermint iced tea
- chai tea latte
- ginger iced tea
- chargrilled bbq burger
- chili burger
- tea scones
- stop and go tea sandwich
- green tea lava cake
- egg and spinach sandwich
- chocolate and banana toasted sandwich
- veggie sandwich panini
- split pea soup
- potato soup
- weight watchers golden cream soup
- basil tomato mozzarella salad
- ham pea and cheese salad
- anja's egg salad
- mozzarella beef burger

Cleaning/Clearing tasks

- clean the bedroom
- dust the TV
- wash the clothes
- water the plant
- take out trash
- wash the dishes
- clean the window
- mop the countertop
- clean the table
- pick up and put all the toys to the toy box
- charge the phone
- play the music

3 Results for other LLMs

LLM Models ↓	Metrics →	LLM	LLM + KG	LLM + KG + Human
Gemma2 9B	Mean Ingd. Overlap (in %) ↑	88.04	88.75	91.93
	Avg. Tokens Used ↓	8122	8099	3999
Llama3 70B	Mean Ingd. Overlap (in %) ↑	90.33	95.89	97.0
	Avg. Tokens Used ↓	7103	7451	4031