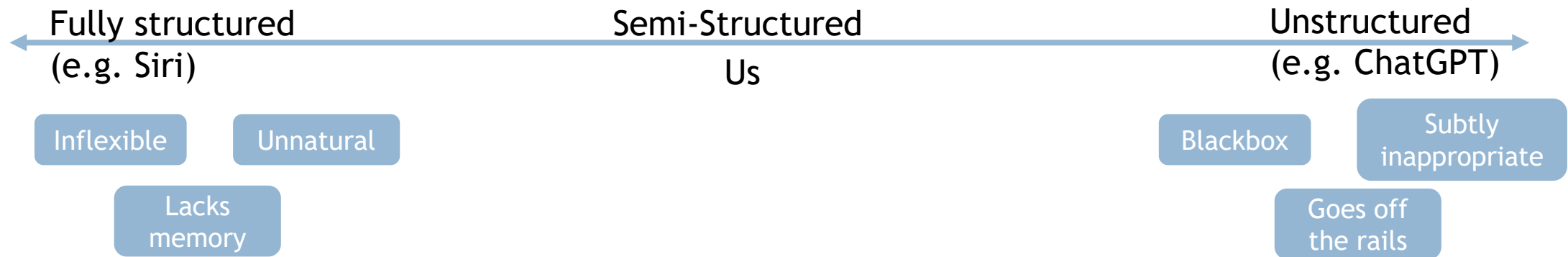


D3M ConvRec Demo

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Sara Kemper, Manav Shah, Anton Korikov, Scott Sanner

1

Semi-structured Prompt-based Conversational Recommendation Assistant



Siri

Sure, I would recommend Penny's Hot Chicken on Yonge Street

Hmm.. I don't have an answer for that. Is there something else I can help with?

Can you give me some restaurant recommendation?

Do they have free wifi?

ChatGPT

Certainly! Here are some Japanese restaurants you might enjoy:
Sushi Yasuda (New York City, USA)
Jiro's Sushi (Tokyo, Japan)
Zuma (London, UK)

I would love to have some Japanese food.

Our recommendation system

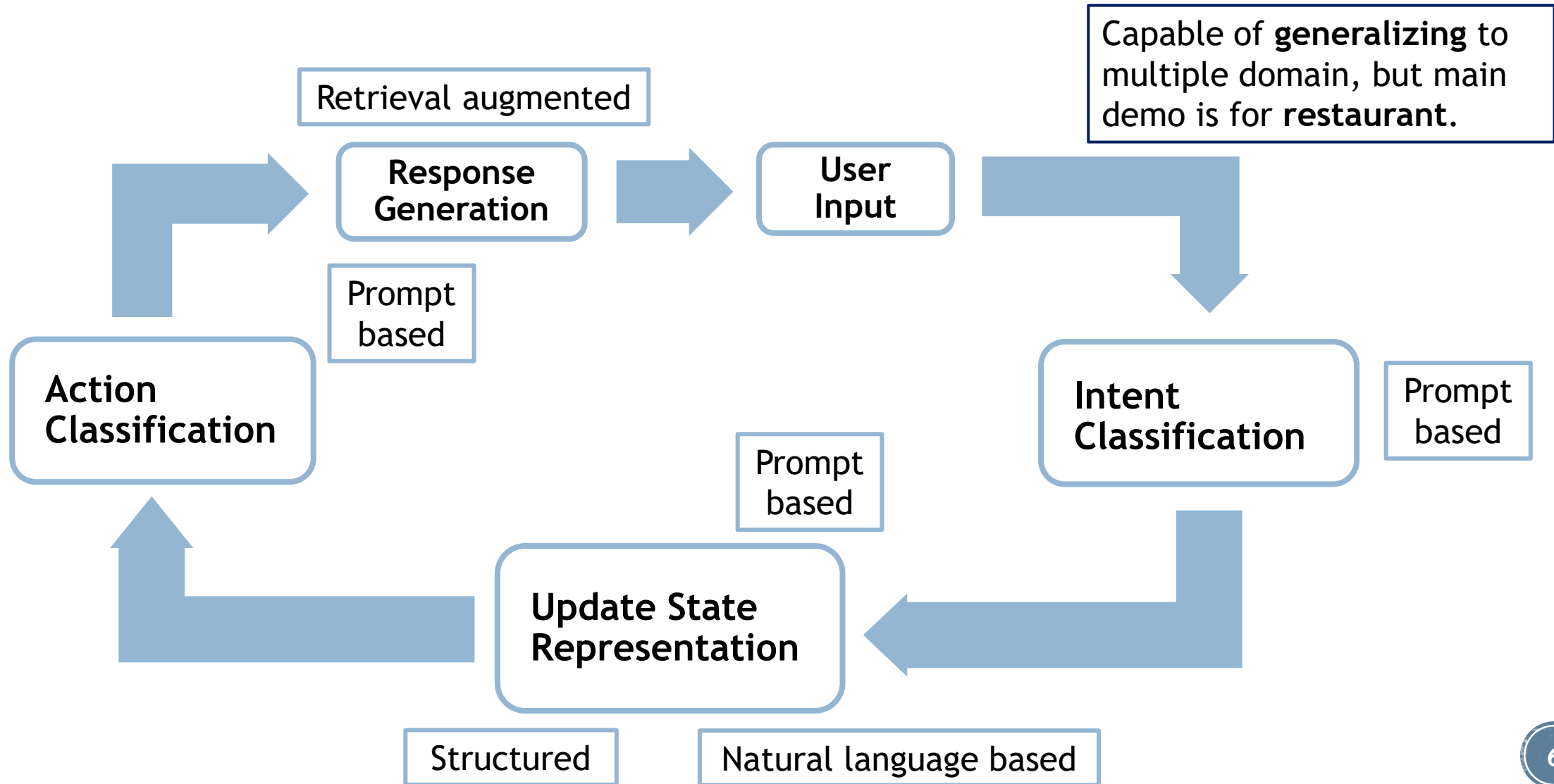
Can you provide the location?

I would love to have some Japanese food.

Jasper Avenue

How about checking out I Love Sushi for Japanese cuisine? It's great for families and has a casual yet classy vibe. And for more options, Let's Grill Sushi & Izakaya on Jasper Avenue is also worth considering. Both have excellent food according to customer reviews.

Semi-structured Prompt-based Conversational Recommendation Assistant



Demo

I am looking for **Japanese** restaurants that serve excellent **sushi**, preferably in a **casual** setting.

Can you provide the location?

Information gathering

Tower Road NW & Kingsway NW

How about trying Washoku Bistro for a **comfortable** and **laid-back vibe** while enjoying some delicious **Japanese sushi**? But if you're looking for something quick and easy without sacrificing taste, Tokyo Express is another great option near the same location.

Provides Recommendation

What kind of menu do they offer?

Demo

For Washoku Bistro, they offer a lunch menu with **bento boxes** and **entrées**, with limited options. They also have **sushi rolls**, such as **spicy salmon rolls** and **California rolls**. As for Tokyo Express, they have a wide variety of options including **bento boxes**, **sushi combos**, **feature rolls**, **tempura**, and **noodles**.

I'm sorry that you did not like the recommendation. Is there anything else I can assist you with?

Rejects recommendation
/

Ok, then the first one doesn't seem to match my preference.

Demo

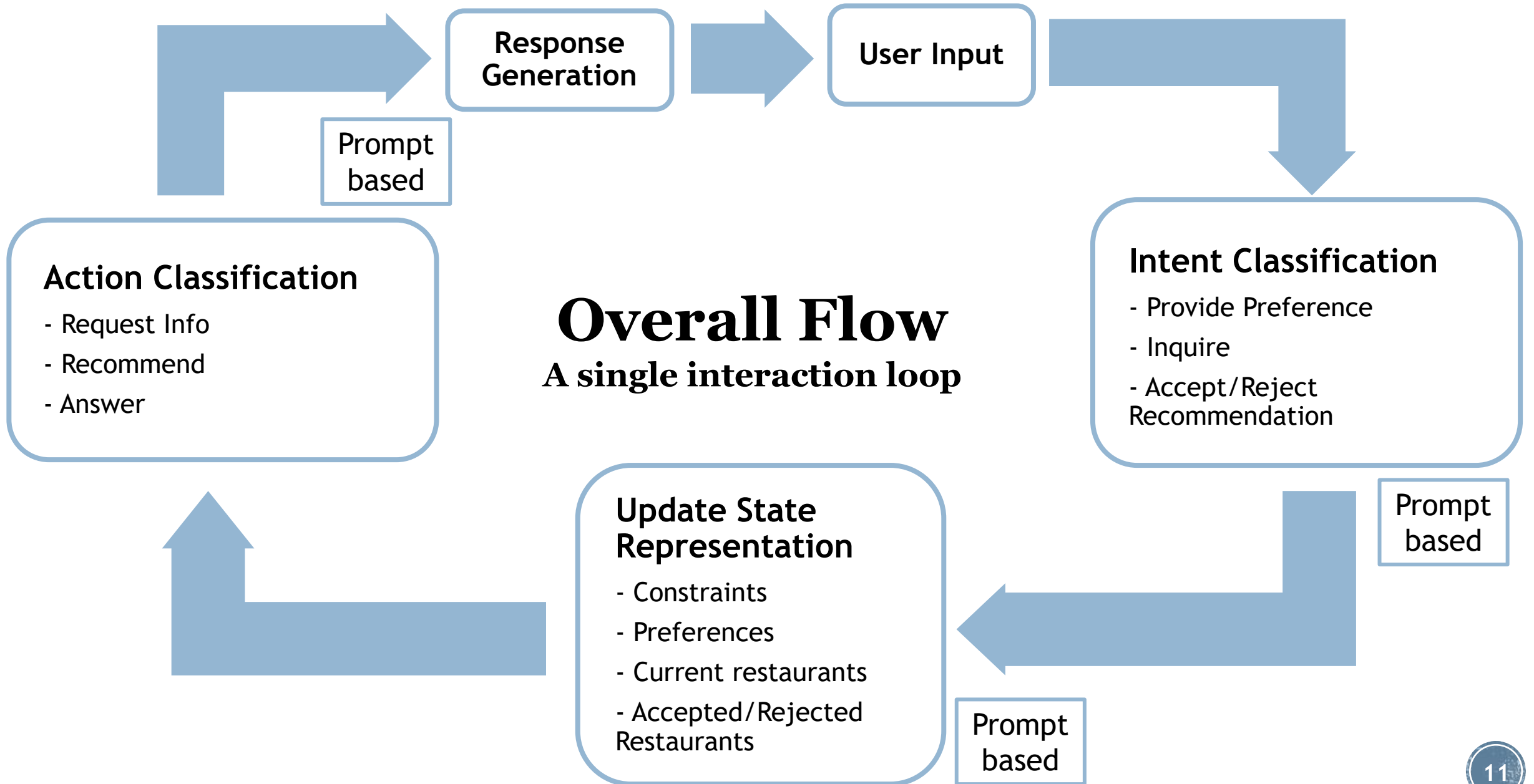
Tokyo Express has a parking lot.

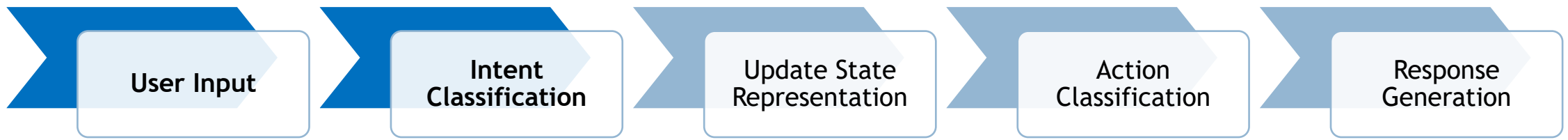
Great! Enjoy your meal! If you need any more assistance, feel free to ask.

Does Tokyo Express have a parking lot?

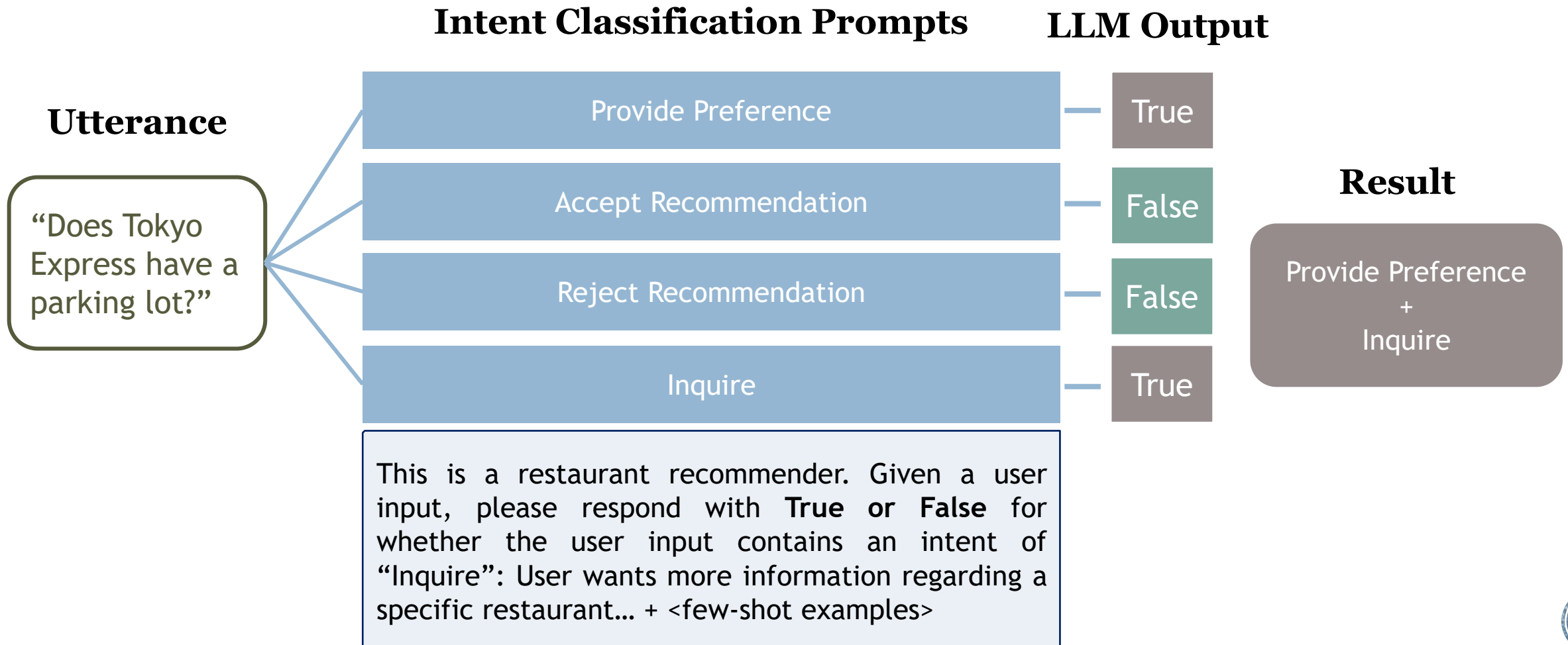
Accepts recommendation
/

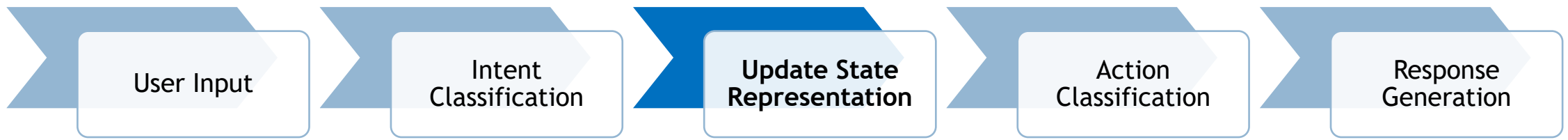
Great. I will go there then. Thanks!



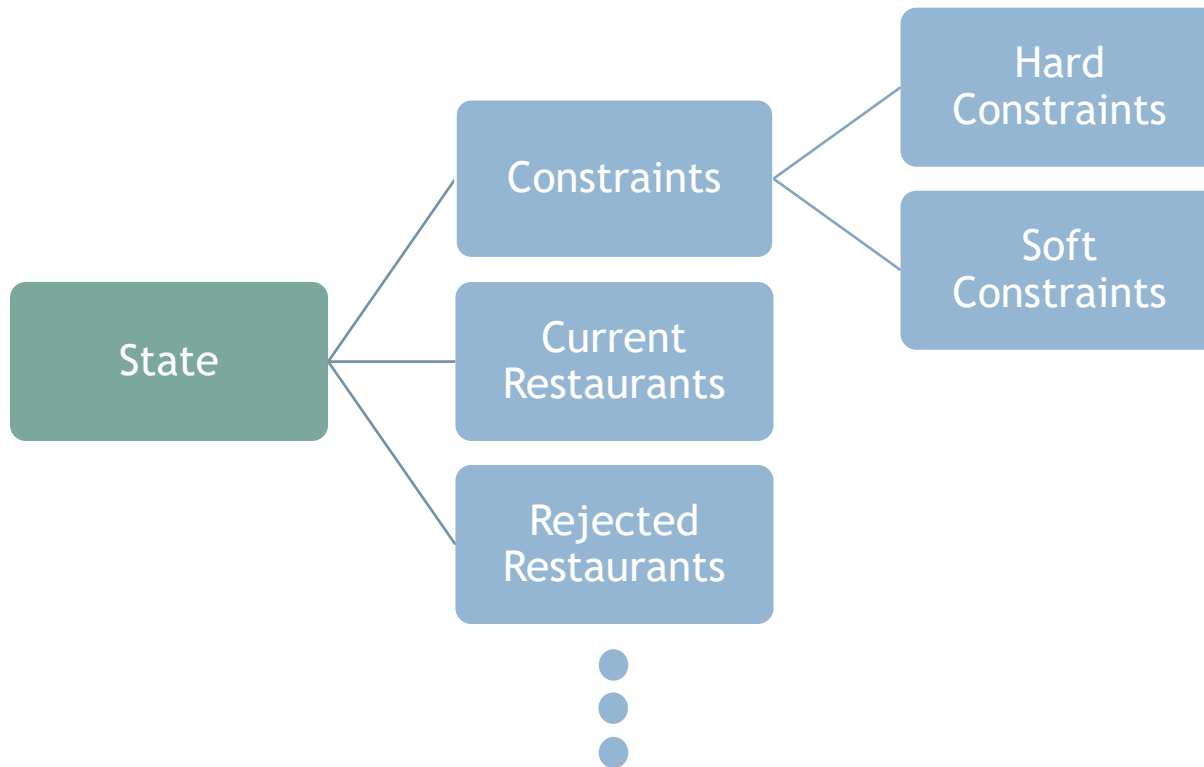


Multi-label Intent Classifier





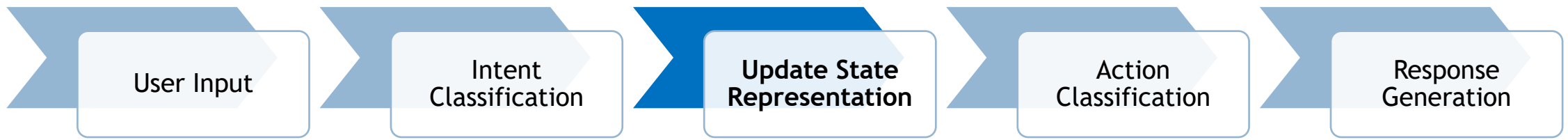
State Representation



Question: How should we update the constraints?

Answer: Use LLM!

- **Input:** Previous hard/soft constraints + user's input
- **Output:** Updated hard/soft constraints



Updating Constraints

You are a restaurant recommender. Please give me the updated hard and soft constraints towards restaurants based on the user's current input. Hard constraints are...

Here are the **descriptions** of each constraint categories that you have to extract:

...

<few-shot examples>

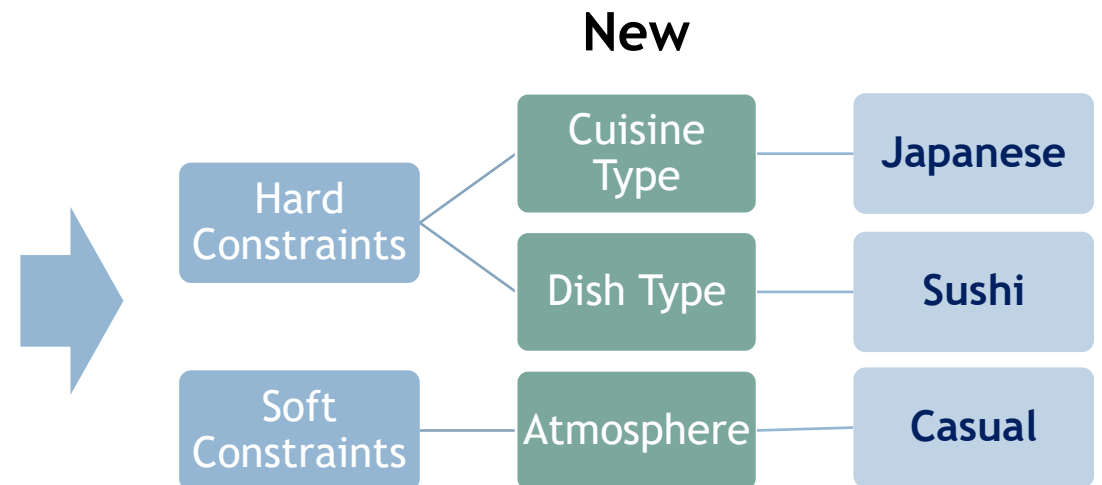
Old Hard Constraints:

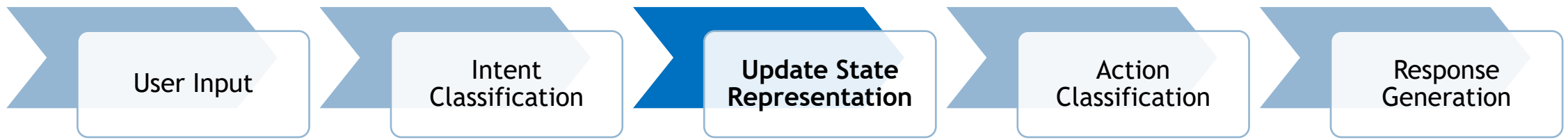
None

Old Soft Constraints:

None

User's Current Input: "I am looking for **Japanese** restaurants that serve excellent **sushi**, preferably in a **casual** setting."





Updating Constraints

You are a restaurant recommender. Please give me the updated hard and soft constraints towards restaurants based on the user's current input. Hard constraints are...

Here are the **descriptions** of each constraint categories that you have to extract:

...

<few-shot examples>

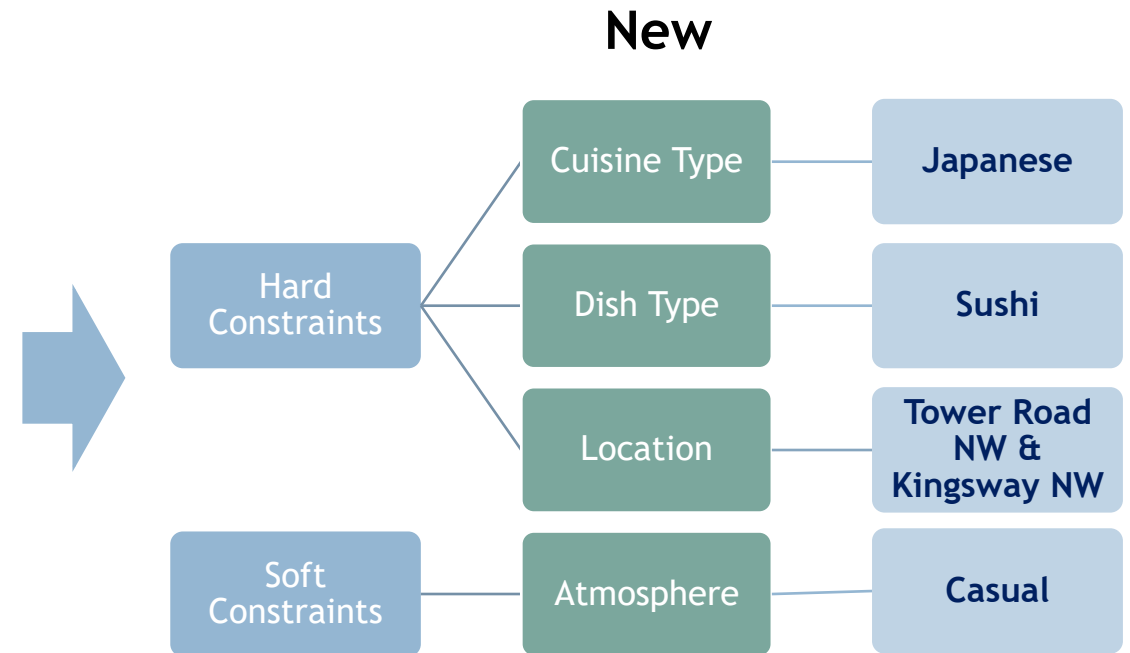
Old Hard Constraints:

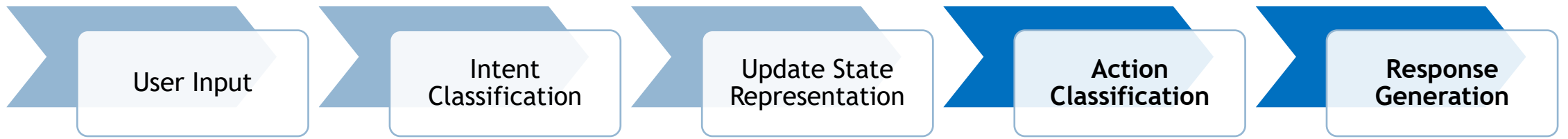
- cuisine type: "Japanese"
- dish type: "Sushi"

Old Soft Constraints:

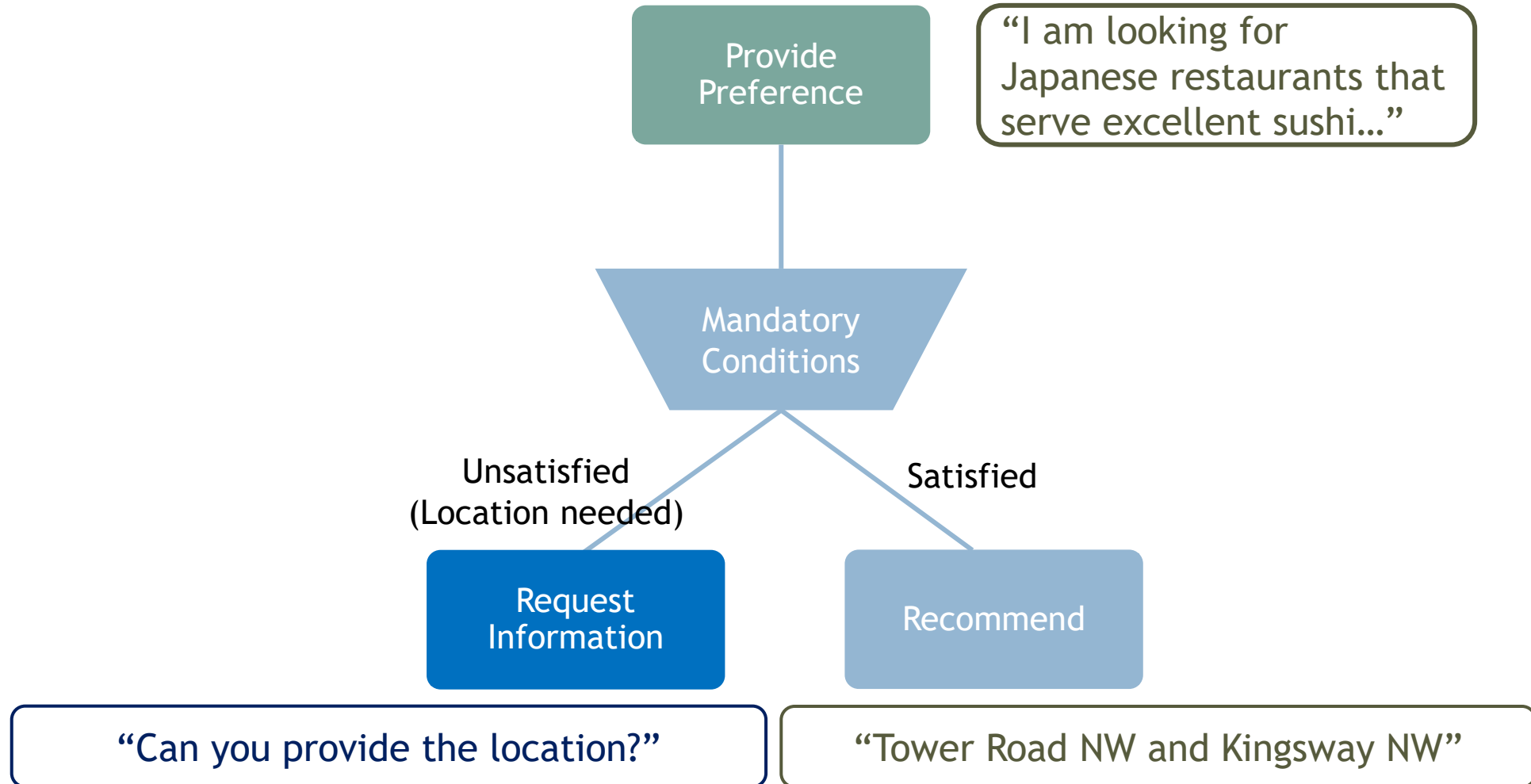
- atmosphere: "Casual"

User's Current Input: "Tower Road NW & Kingsway NW"



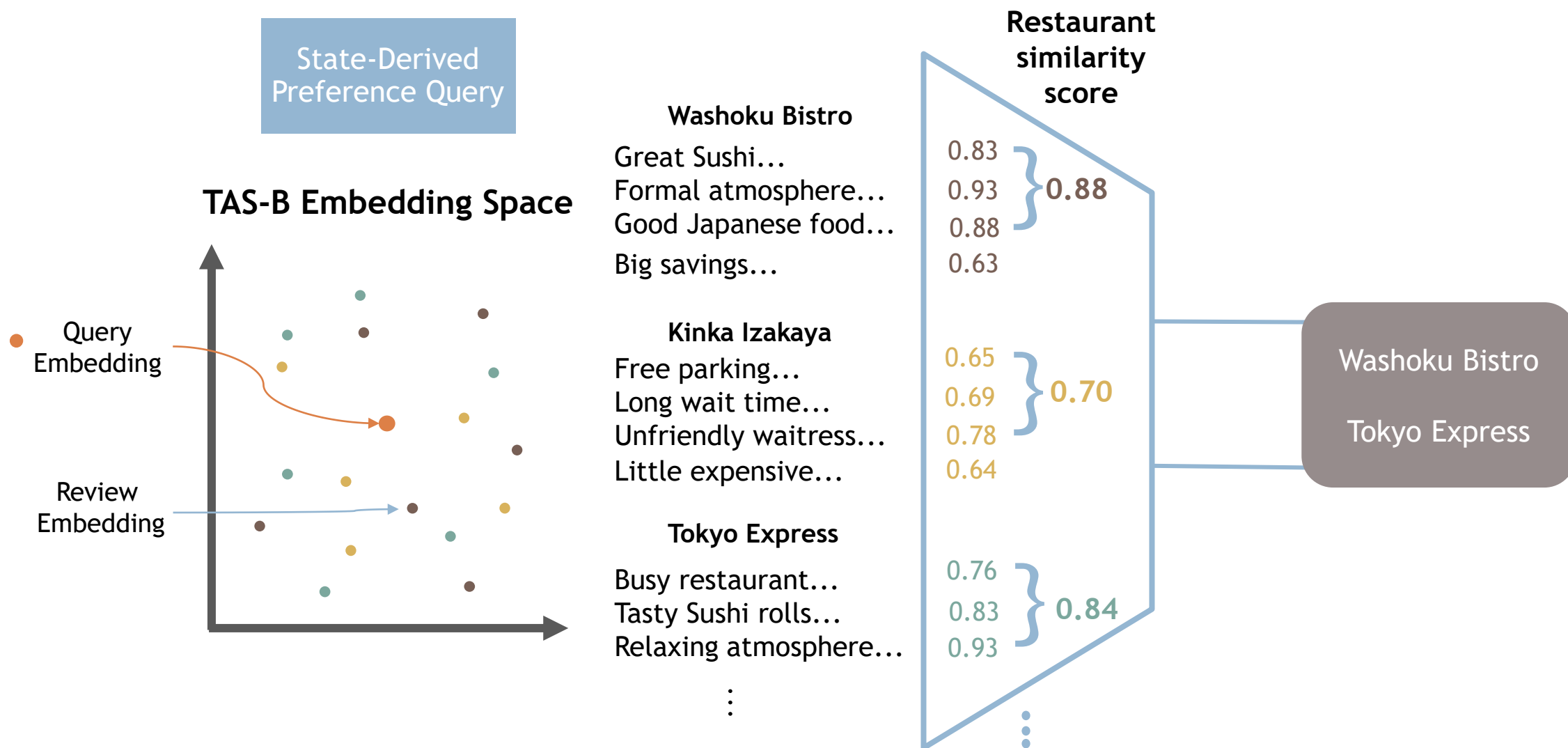


Classify Recommender Action

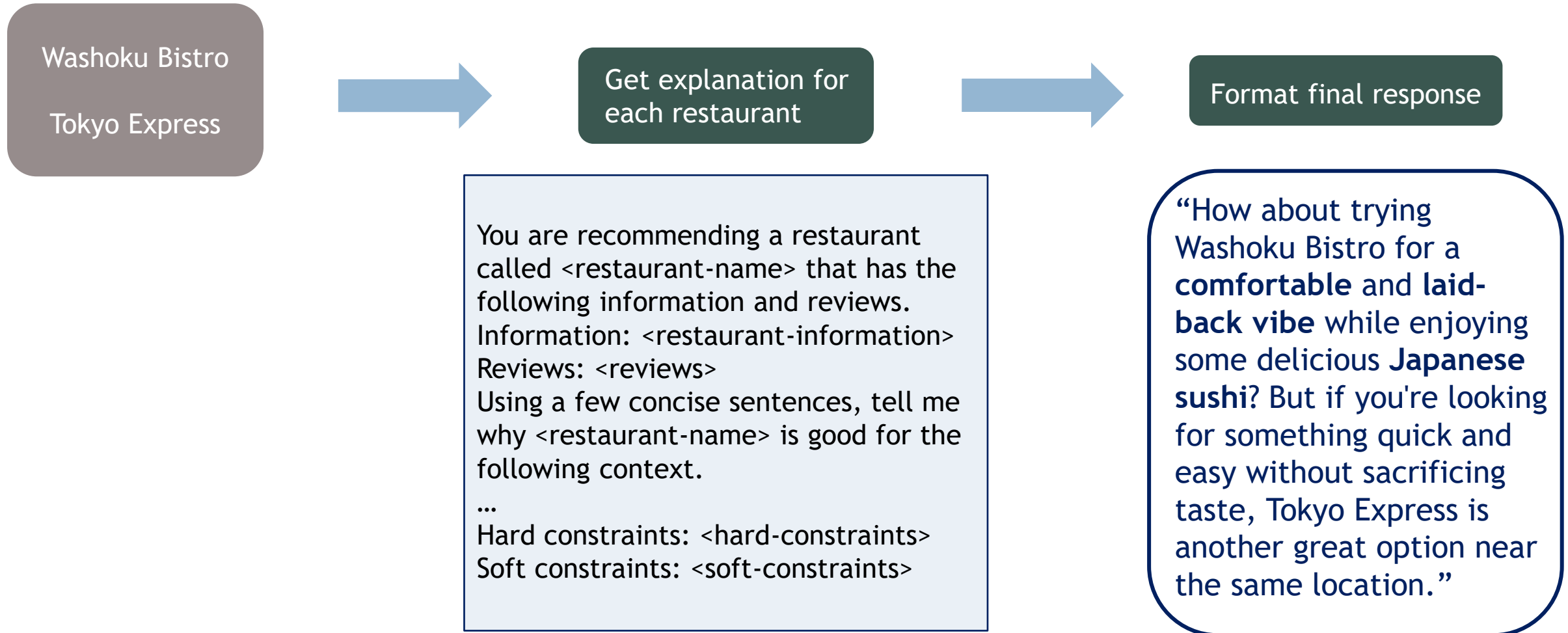


Recommend + QA

Recommend: Information Retrieval with Late Fusion



Recommend: Format Response with Explanation



Question Answering

“What kind of menu do they offer?”



Answer question from metadata?



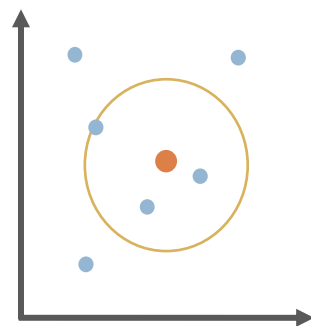
Standard dense retrieval



Extract answer from reviews



Embedding Space for 1 Restaurant



- Query Embedding
- Review Embedding

You are responsible for answering questions about <current-restaurant-name> based on provided information. Answer the question below.

...

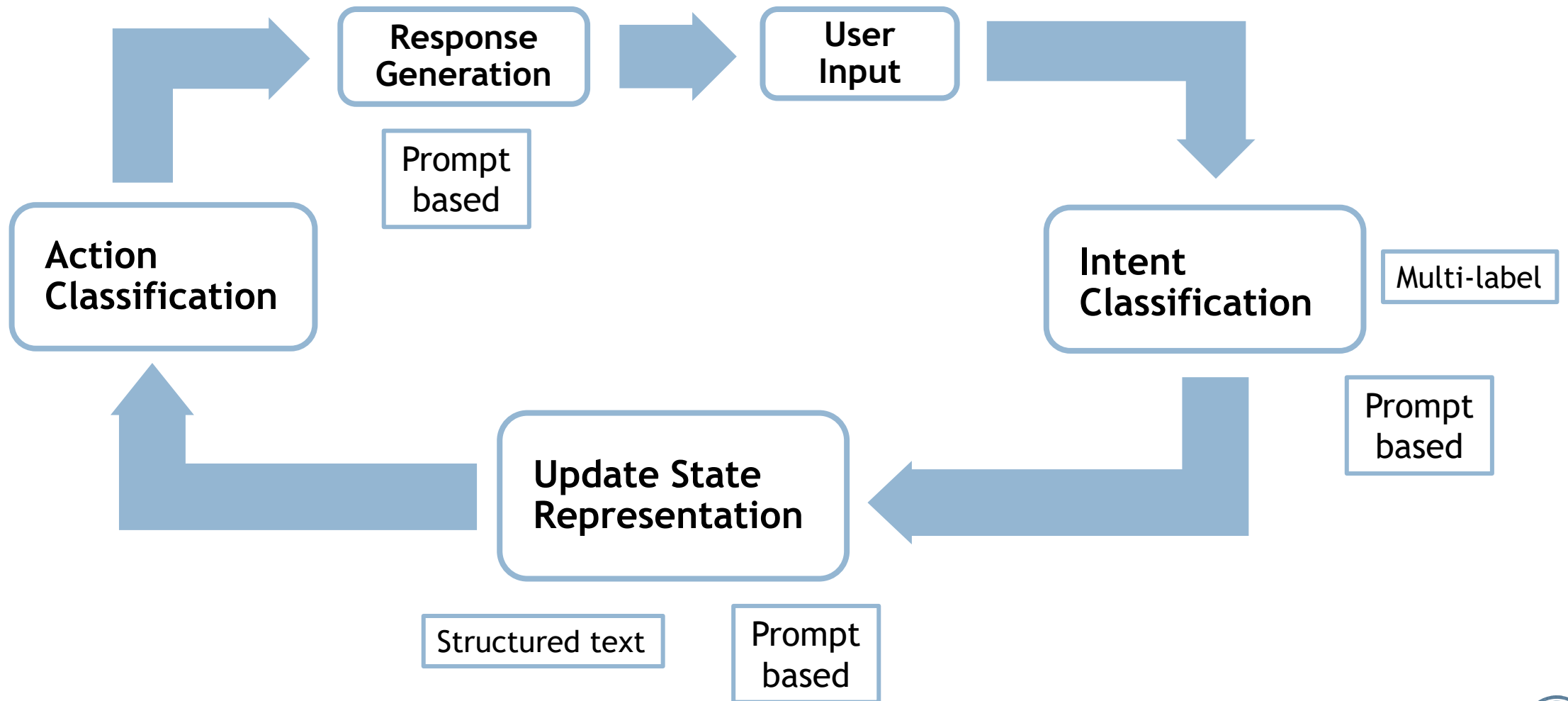
Question: <question-from-user>
Information: <top-k-reviews>
Answer:

“For Washoku Bistro, they offer an affordable lunch menu with a decent selection of entrees such as bento boxes and sushi rolls that come with some spicy options. However, their menu can be limited, and they don't have many traditional items. For Tokyo Express, they have a variety of options available, including bento boxes, sushi combos, feature rolls, tempura, and noodles.”

How does the LLM size compare?

Test type	GPT3.5-175B	Alpaca Lora-7B
User Intent Classification	Passed 105 / 114	Passed 9 / 114
Constraints Updater	Passed 99 / 134	Passed 6 / 134
Current Item Extractor	Passed 14 / 14	Passed 3 / 14
Accepted Item Extractor	Passed 10 / 10	Passed 3 / 10
Rejected Item Extractor	Passed 10 / 10	Passed 0 / 10
Answer Extract Metadata Category	Passed 7 / 10	Passed 4 / 10
Answer Separate Question	Passed 12 / 15	Passed 0 / 15

Summary



Try it! Code is open sourced with MIT license.

Google Colab Demo



<https://apoj.short.gy/d3m-llm-convrec-demo>

Github Repository



<https://apoj.short.gy/d3m-llm-convrec-git>