

# Demo Session: Price Discovery



# Overview

- What has been completed
- Current Progress
- Next Steps



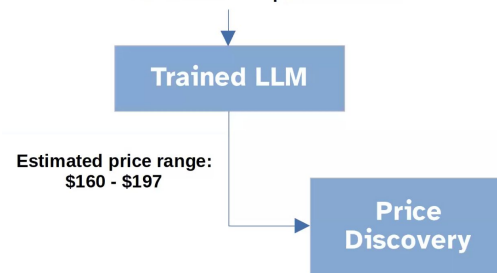
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# Objective

Develop LLM that sees product image and reads product description to establish price range.



Silver necklace with semiprecious stone



# Recap

## Week 1

- Collected Amazon 2023 product dataset ~ 1.4m entries
- Feature engineering on dataset
- Data scraper tested

## Week 2

- CLIP w/ statistical Architecture designed and tested
- Text and image embeddings created
- Evaluation metrics selected and tested preliminarily

## Week 3

- vit-large CLIP model used
- Evaluation metrics improved
- RAG implementation
- Price range outputting for products

# This Week

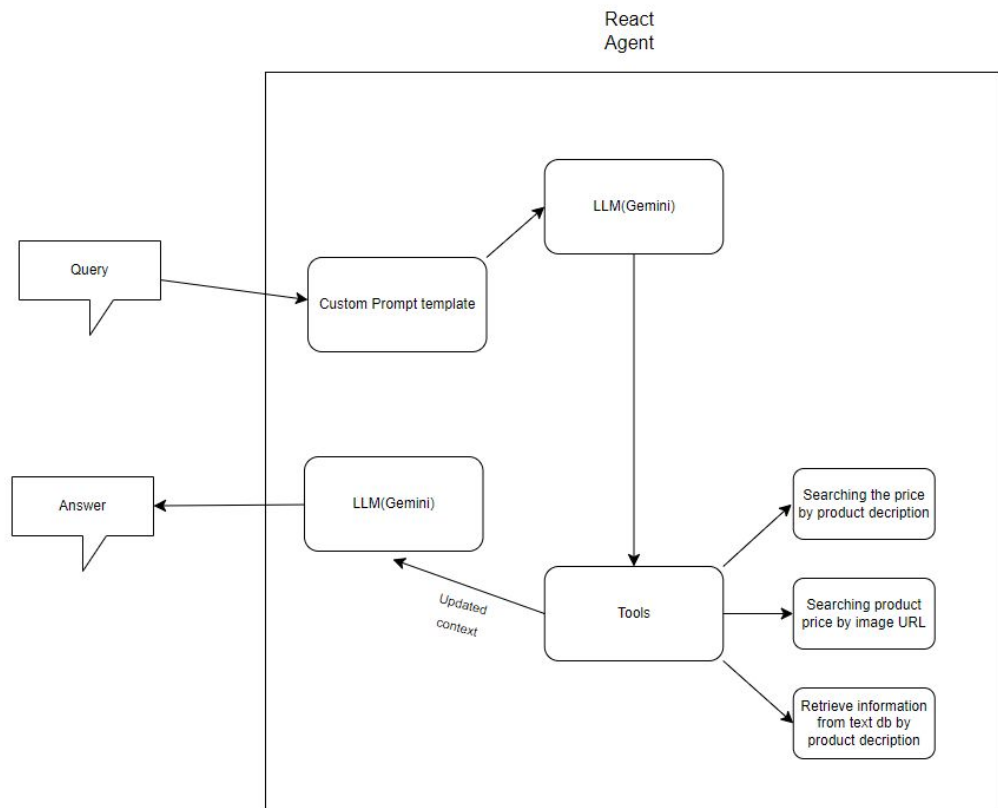
- Enabling / Fine tuning the LLM to be aware of events like Black Friday sale, etc. eg. using agents to search on current market situation.
- Improving the prompts.
- Evaluation of agents and prompts.

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# Agents



# Components for Agent



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# Prompt Engineering





# ReAct Agent

Reason

Action

```
# Create test prompt to be used with the agent
test_prompt = """

As an experienced product analyst adept at accurately determining product price ranges,
utilize the available tools {tools} to answer the question asked.
Return ONLY a reasonable, accurate and concise price range for my product after analysing its current pricing
and that of a similar products.

Use the following format:

Question: the input question you must answer
Thought: you should always think about what to do
Action: the action to take, should be one of [{tool_names}]
Action Input: the input to the action
Observation: the result of the action
... (this Thought/Action/Action Input/Observation can repeat N times). If no result is found use your own knowledge
Thought: I now know the final answer
Final Answer: the final answer to the original input question

Begin!

Question: {input}
Thought: {agent_scratchpad}

"""

test_prompt_template = PromptTemplate.from_template(test_prompt)
```

# Testing of Prompts

Prompt	Range	Latency
<p>As an experienced product analyst adept at accurately determining product price ranges, utilize ALL the available tools {tools} to answer the question asked accurately.</p> <p>Check whether the product is in the database, then search the internet and compare the prices.</p> <p>If a tool encounters an error, use another tool.</p> <p>Return ONLY a reasonable and accurate PRICE RANGE for the product.</p>		
<p>Drawing on your extensive experience as a product analyst skilled in precision pricing strategies within the fashion industry,</p> <p>leverage the provided tools {tools} to deliver a highly accurate and succinct price range for the specified product.</p> <p>This should be based on a meticulous analysis of both its current market value and that of comparable products.</p> <p>Your output should consist solely of a well-founded and concise price range, ensuring optimal accuracy.</p>		
<p>As an experienced product analyst adept at accurately determining product price ranges, utilize the available tools {tools} to answer the question asked.</p> <p>Return ONLY a reasonable, accurate and concise price range for my product after analysing its current pricing and that of a similar products.</p>		

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# Performance



# Input

Description: “Black leather boots without heels for women”

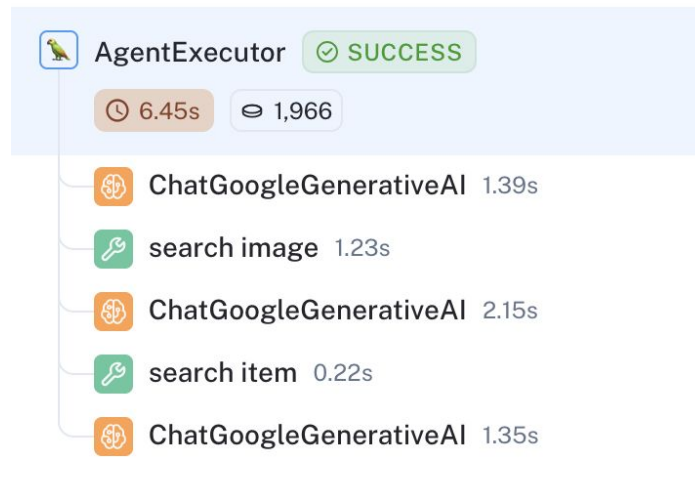


# Performance of Agent

- Used Langsmith to monitor Agents Performances
- 6.45s was the latency
- the actual price of the product is \$168.00

AI

Final Answer: \$100-200



# Performance of Prompts

Prompt	Range	Latency
As an experienced product analyst adept at accurately determining product price ranges, utilize ALL the available tools {tools} to answer the question asked accurately. Check whether the product is in the database, then search the internet and compare the prices. If a tool encounters an error, use another tool. Return ONLY a reasonable and accurate PRICE RANGE for the product.	\$100 - \$200	6.45s
Drawing on your extensive experience as a product analyst skilled in precision pricing strategies within the fashion industry, leverage the provided tools {tools} to deliver a highly accurate and succinct price range for the specified product. This should be based on a meticulous analysis of both its current market value and that of comparable products. Your output should consist solely of a well-founded and concise price range, ensuring optimal accuracy.	\$100 - \$200	11.38s
As an experienced product analyst adept at accurately determining product price ranges, utilize the available tools {tools} to answer the question asked. Return ONLY a reasonable, accurate and concise price range for my product after analysing its current pricing and that of a similar products.	\$99.98 - \$199.98	12.08s

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# Next Steps



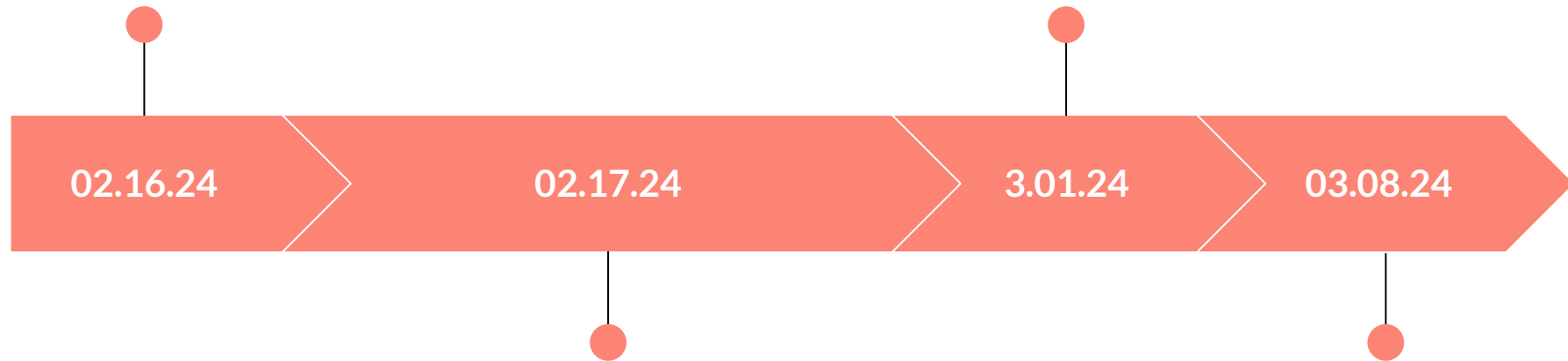
# Plan for improvement

- Migrating the Vector Database from local machine to Cloud.
- Improving the data by exploring different embeddings from different multimodal llms or looking into Knowledge graph database.
- Experiment with plan and execute agents to try and reduce latency
  - Improving on the decided evaluation metric that makes sure the range given is suitable and that the price is in the range.
  - Experimenting with different LLMs (Mistral and Mixtral)



Image and Text  
Embedded

Pipeline  
Implementation



Models developed and  
fined tuned

Product finalization &  
Monitoring



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# Feedback?

