

Final Project: AI Text-to-Image Generation

94-844 Generative AI Lab
April 25 2024

Group 9
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Agenda

- Our Three Products
- Text Analysis
- Image Generation



Samsonite Luggage

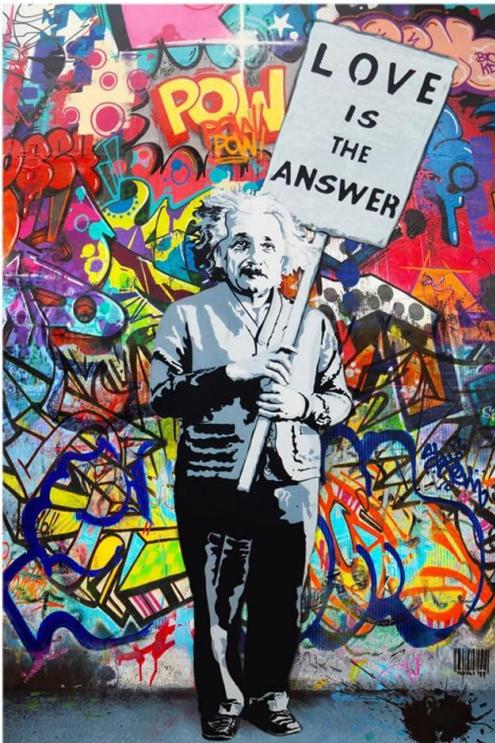
- **Category:** Travel & Luggage
- **Core Features:**
 - Durability
 - Wheels, lock
- **Customer Feedback:**
 - 4.5 / 5
 - 5,705 reviews
 - 800+ bought in past month
- **Rationale:**
 - Frequently used for travelers
 - Simple design, color
 - Specific features

Espresso Machine

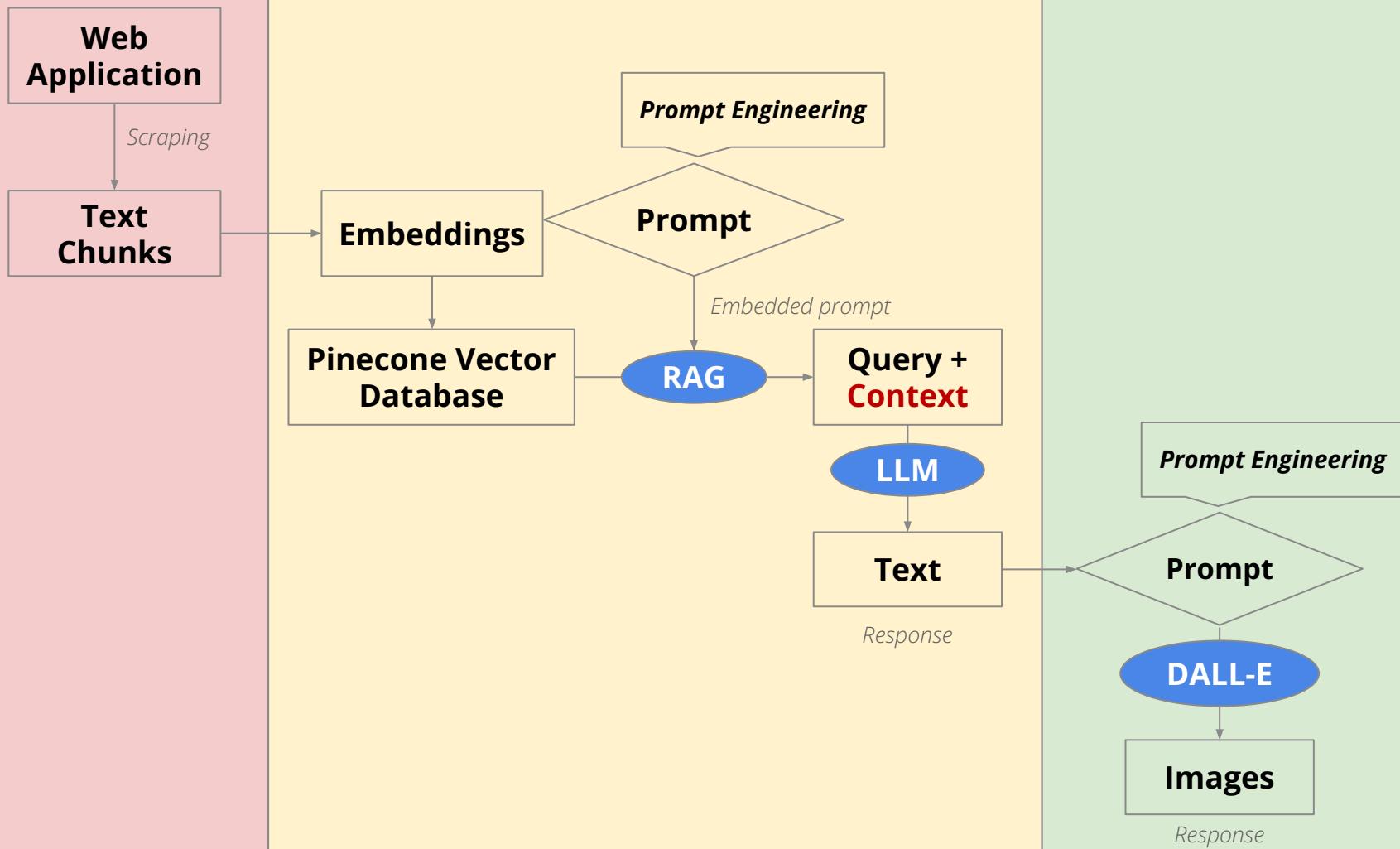


- **Category:** Kitchen Appliances
- **Core Features:**
 - Commercial-Grade Quality
 - Smart Dosing Technology
 - Easy to clean
- **Customer Feedback:**
 - 4.7 / 5
 - 194 reviews
- **Rationale:**
 - Small Nuances
 - Description and Reviews focus on functionality rather than the "look"

Framed canvas print: “Love is the Answer”



- **Category:** Wall Art
- **Core Features:**
 - Vibrant colors
 - High quality printing & material
 - Good size & easy to hang
- **Customer Feedback:**
 - 4.7 / 5
 - 831 ratings
 - 123 reviews
- **Rationale:**
 - Embedded imagery and text





Product 1: Samsonite Luggage



LLM Queries Used

["Describe in detail what this product is, based on the product description.",
 "What are some features of this product, especially focusing on visual features?",
 "What is the main purpose of this product?",
 "What is most loved about this product?",
 "What is most hated about this product?"]



Context Chunk for Features (k=15)

"Great product and love the look. Very good product I bought this luggage for an upcoming 2-week trip. I love the color, but I also did some research before making my purchase. Samsonite makes quality luggage and I read that a **hard-sided luggage** is more **durable** than what I usually use. I hope to have this luggage last me a very long time and I will do it in style. The **radiant pink color** will stand out, make it easy to spot, and it is **pretty**. The luggage is very roomy, has the **expandable feature, locks, and wheel**. I love it! Nothing Haven't used yet, but I'm happy so far with purchase. Like darker color without being black. Good size with expandable sides. I haven't used this yet but looking it over I'm very happy with my purchase. Large suitcase is huge. **Colorful and durable**. I travel frequently. These are great in the 3 different sizes. **Plenty of room**. Wheels and zipper have been durable. Excellent purchase. **Durable**. Love it. Have not had this for long to give a proper review, but so far happy with purchased. Will update if needed. Traveling Perfect I like everything about this except they neglected to place a handle on the wheel end to help with placing them in a car or on a bed to pack and unpack. Someone was sleeping during the design phase. My mother loved it! Nice color as well This is the best carry-on suitcase, really fits so much, very surprised how nice it is. Rugged. Easy to menuver. "



Text Summarization

Feature Extraction

Sentiment Analysis

LLM Response

"Based on the provided information, the product in question is a Samsonite hard-sided luggage in a **radiant pink color**. It is described as **durable, roomy, and stylish**, with features like **expandable sides, locks, and wheels**. Customers have **expressed satisfaction** with the purchase, noting the quality of the product, its size, durability, and vibrant color. Some users mentioned that the suitcase is **easy to maneuver, fits a lot of items**, and has stood the test of travel. However, a suggestion was made for the addition of a handle on the wheel end for easier handling. Overall, the feedback is positive, highlighting the product's functionality, durability, and aesthetic appeal."



Image Generation - Baseline Prompt

```
# Craft prompt
prompt = f"""
    Generate an image of a product
    Description: {analyses["Product Description"]}.
    Features: {analyses["Product Features"]}.
    Usage: {analyses["Product Usage"]}.
    Good Sentiment: {analyses["Product Sentiment Good"]}.
    Bad Sentiment: {analyses["Product Sentiment Bad"]}.
    """
    ....
```

Include visual features: i.e. color, size dimension, material, shape, pattern, logo, etc.)

Iterations



- Decent replication
- Consistent

Do not include text in the image.

Create an image that illustrates a human being using the product in a real-world setting (for example a person ready to travel), showcasing the usage of the product.

.....



- Unrealistic !! Looks fake !

Do not include text in the image.

Create an image that illustrates a human being using the product in a real-world setting

Photograph, sharp focus, cinematic, Sigma 85mm f/1.4 and ISO 100.

.....





Product 2: Espresso Machine



LLM Query & Response #1

Describe in detail what this product is, based on the product description.

Based on the reviews provided, the espresso machine being discussed seems to be a KitchenAid product that has received positive feedback from users who received it for free from Influenster for review. Users mentioned that the machine produces coffee shop-like results, has amazing grinding performance, easy cleaning, and provides a recipe book and clear instructions for use. It is noted as not being a simple machine, but worth the investment for coffee lovers looking to enhance their coffee experience. Overall, users found the machine easy to use, efficient in grinding beans, and a great addition to their daily coffee routine.

Outputs **non-relevant (or inaccurate) information** as a response if not enough information on the subject matter.



LLM Query & Response #2

Provide more details on the visuals of the product.

Based on the reviews provided, the KitchenAid Espresso Maker seems to be a professional-grade machine with a learning curve but incredible results. It is praised for its customization options, solid build quality, fast operation, easy cleaning, and impressive features such as the milk frother/steam wand. However, some users mentioned that there was a learning curve in understanding the settings and techniques to achieve the ideal cup of coffee. Better visual instructions and clarity on grind size and temperature settings were suggested for improvement. Overall, users are impressed with the machine and anticipate using it for years, considering it a staple in their kitchen.

Not a lot of reviews include “Visual Features”



LLM Query & Response #3

What is the body made of?

'The material of the body of the espresso machine is stainless steel, as mentioned in the review by foxgiirrl.'

It's a combination of 2 or 3 materials but only captures 1 review that mentions stainless steel.



LLM Query & Response #4

What is most hated about this product?

Based on the reviews provided, it seems like the coffee grinder and espresso machine mentioned are praised for their ease of use, high quality, and ability to produce great-tasting coffee. Customers highlight features such as easy setup, detailed instructions, durability, and the ability to customize coffee to personal preferences. The machines are also commended for their modern design and space-saving qualities. Overall, these products are seen as game changers for coffee lovers and are highly recommended for those seeking a coffee shop experience at home.

Even if there is no relevant response found in context, it still makes up an irrelevant response.



Image Generation using LLM Responses



[Baseline] + “More Visual Features of the product ”



[Baseline] + “Body made of stainless steel”



“Generate an image based on
Product Specifications (or
Model includes)”

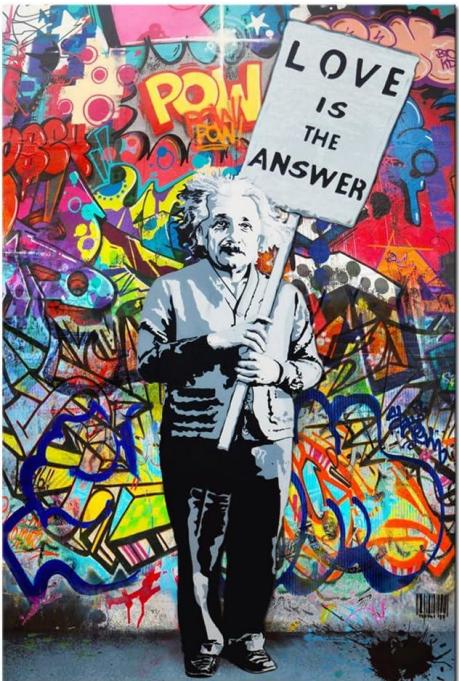


“Generate an image based on the
Visual Features. (*Manually added*
features.)”



Product 3: Canvas Print

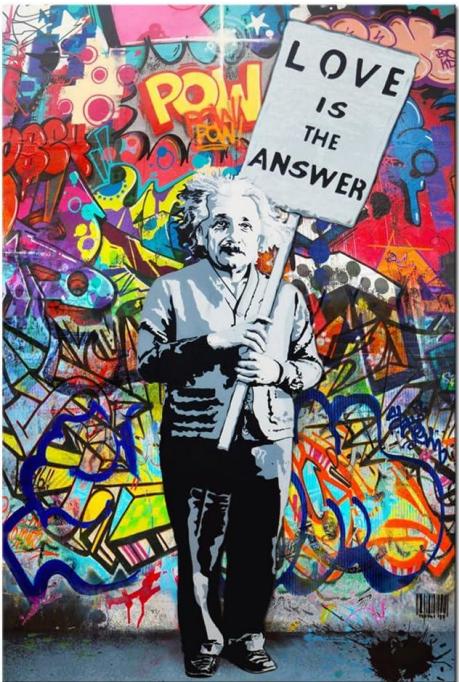
LLM Query & Response #1



Describe the potential customer of this product and the emotions associated with it.

Based on the reviews, the product being described is a colorful and vibrant canvas print featuring Albert Einstein in a **fun-loving manner**. Customers have expressed **great satisfaction** with the quality, size, and brightness of the colors in the artwork. The print has received high praise for its ability to **bring joy and happiness** to those who view it. The overall consensus is that the product is worth the purchase, with many customers mentioning their desire to buy it again or recommend it to others.

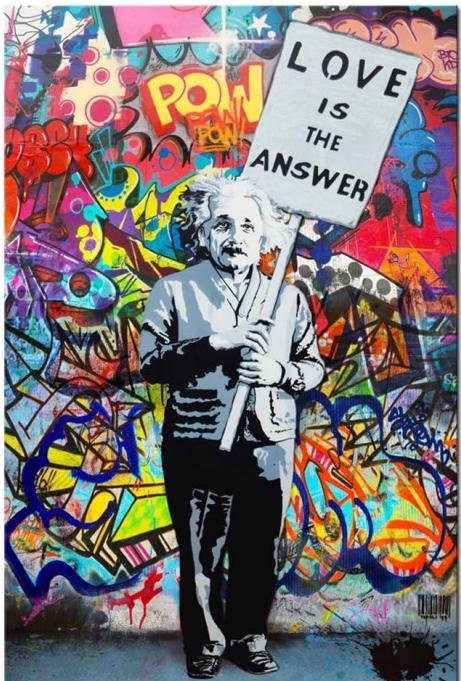
LLM Query & Response #2



Describe how does the product look like, focusing on physical and visual features such as size, material, color, odour, taste, weight.

The product description highlights that the product is of **amazing quality with vibrant colors** and great appreciation from the company. Customers have found it **well-packaged**, **lightweight**, and **easy to hang**. The artwork is as described and **looks great in various settings**. It is a **colorful piece** that makes the customers smile and brings joy every time they see it. The **colors are bright**, and the **quality is fantastic**, making it a beloved piece of art. Despite being described as **lightweight**, it is also **of good quality**. Customers feel that it is exactly as shown and are satisfied with their purchase, stating they would buy it again or as a gift.

LLM Query & Response #3



Describe any specific details or elements of the product that make it different from similar products, including any phrases, symbols, or messages.

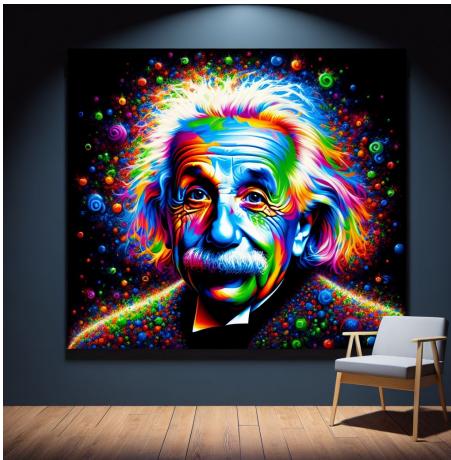
Based on the customer feedback, the product is described as a great quality item that is appreciated by customers. It adds a **lot of color to the living room**, is exactly as shown in the picture, and **fits perfectly in the office** without looking cheesy or cheap. While the colors may not be extremely vibrant, the piece still **stands out in a room and looks incredible under black lights**. Overall, it is a gorgeous piece that meets expectations and is loved by customers.

DALL-E Prompts & Outputs



[BASELINE]

Generate an image of a product using the following information.



[Baseline] + Make sure it captures **specific elements** of the product.

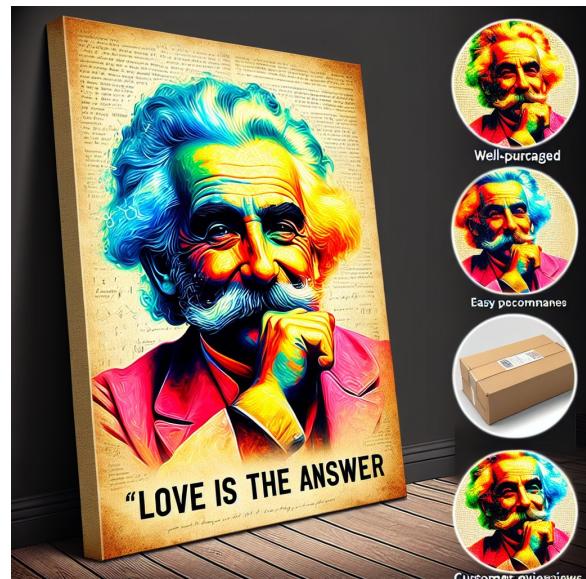


[Baseline] + Focus on **emotions** associated with the product.

DALL-E Prompts & Outputs



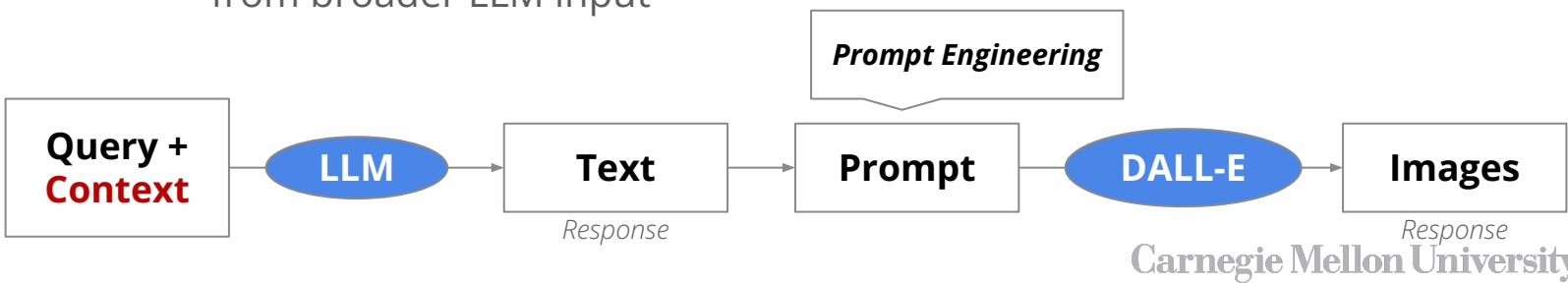
[Baseline] + Make sure to include the **phrase that is an important element** of the product



[Baseline] + Include **Einstein and his sign with 'Love is the answer' message**

Takeaways: Challenges & Lessons Learned

- If the information is not available in product description/reviews [context], it is unable to generate the image.
- Generated images still look “AI-like”, fake/unrealistic, “wrong”.
 - Wrong scale with luggage
 - Coffee glass in the air
- Recognizes one detail, but overlooks another.
 - Making everything in the room steel
- DALL-E prioritizes the specifics of the prompts, overshadowing nuances from broader LLM input





Thank You!