

A Prompt Template for Text Generation from LMM

The two prompt templates for House dataset are shown in Figure 3 and in Figure 4

B Prompt Template for Training Data Generation

(1) **Extracting features from text:** Prompt template for Extracting features from the sentence of the text is shown in Figure: 5.

(2) **Listing visible and non-visible features:** Prompt template for listing visible and not visible features from the list of features is shown in Figure: 6.

(3) **Listing hallucinated features:** Prompt template for listing hallucinated features is shown in Figure: 7.

(4) **Listing salient and non-salient features:** Prompt template for listing salient and not salient features is shown in Figure: 8.

(5) **Generating rationale for features:** The prompt template for generating rationale is shown in Figure 9.

C Prompt Design for Post-hoc Text Editing using LLM

The prompt template is shown in Figure: 10 for updating the text using LLM GPT-3.5 according to the feedback of the critic model.

D Prompt Design for Preparing Salient and Faithful Ground-truth Text

We use the prompt in Figure: 11 to extract the faithful and salient features from the hallucinated ground-truth text. Then using the prompt in Figure: 12, we generate a final salient and faithful ground-truth text.

E Data Split Ratio for Training the Critic Model

Table 6: House Data split ratio for Critic Model-3a

Data	#Num. of Instances
Training Samples	9517
-Hallucination Features	5478
-Salient Features	2703
-Not-Salient Features	1336
Validation Samples	1418
-Hallucination Features	845
-Salient Features	409
-Not-Salient Features	164

Table 7: House Data split ratio for Critic Model-3b

Data	#Num. of Instances
Training Samples	10,359
Validation Samples	1155

Table 8: Product Data split ratio for the Critic Model-3a

Data	#Num. of Instances
Training Samples	13202
-Hallucination Features	2529
-Salient Features	6795
-Not-Salient Features	3878
Validation Samples	2219
-Hallucination Features	393
-Salient Features	1243
-Not-Salient Features	583

F Generated Samples

Figure 13 and Figure 14 show qualitative examples of sample graph-images, sample tabular data-image, the pre-processed ground-truth texts, and the texts generated by different models on the House dataset and Product dataset, respectively.

Table 9: Product Data split ratio for Critic Model-3b

Data	#Num. of Instances
Training Samples	4235
Validation Samples	471

#INPUT Prompt:
Consider the uploaded Image of a House
List the Key features of this image for House Advertising.

#OUTPUT:
Key features of image:1:
The key features of this image are: a large glass wall, a wooden deck with chairs, a swimming pool, and a view of the surrounding city.

Key features of image:2:
This image shows a rooftop patio with a large table and chairs, a small table with two chairs, and a large planter with plants. The view from the rooftop is of a cityscape with skyscrapers and trees in the foreground. The sky is clear and sunny, and there is a blue and white striped awning over the patio. The patio is surrounded by a railing made of metal and glass, and there are several large windows on the side of the building. The building is made of concrete and glass, with a modern design.

Key features of image:3:
The image shows a modern, minimalist bathroom with a white wall tiles, a grey toilet, and a mirror above the sink. The toilet is mounted on the wall and there is a white towel rack next to it. The sink is made of white porcelain and there are two towels hanging from the rack. The shower area is visible in the background, and there is a grey tiled floor. The walls have large white tiles and there is a small window with a white curtain. The overall impression is of a clean, modern, and functional bathroom.

.....
.....

Figure 3: Prompt Template for LMM to generate key features of the image for House dataset

#INPUT Prompt:
Consider the House Linearized Graph:
This house location Manningham. This house property type Apartment. This house address 642/654 Doncaster Rd, Manningham VIC 3108, Australia. This house sold price 526000. This house leased date Sat 23-May-15. This house agency name Vicprop - MELBOURNE. This house agency address Level 10, 179 Queen Street Melbourne Vic 3000 . This house number of bedrooms 2.

Also consider the key features of the images of the House:

Key features of image:1:
The key features of this image are: a large glass wall, a wooden deck with chairs, a swimming pool, and a view of the surrounding city.

Key features of image:2:
This image shows a rooftop patio with a large table and chairs, a small table with two chairs, and a large planter with plants. The view from the rooftop is of a cityscape with skyscrapers and trees in the foreground. The sky is clear and sunny, and there is a blue and white striped awning over the patio. The patio is surrounded by a railing made of metal and glass, and there are several large windows on the side of the building. The building is made of concrete and glass, with a modern design.

.....
.....

Now Generate a Real-estate advertising summary with an appropriate title that summarizes all the features of the House Linearized Graph and the key features of the images of the House.

#OUTPUT:
Title: Luxurious 2-bedroom Apartment in the Heart of Melbourne
This stunning 2-bedroom apartment is located in the heart of Melbourne, just minutes away from the city's top attractions. With a prime location, this apartment offers breathtaking views of the surrounding city and is surrounded by tall trees and other buildings. The apartment has ducted heating, air-conditioning, a dishwasher, a dining room, a large glass wall.....

Figure 4: Prompt Template for LMM to generate text for House dataset

Prompt
You are given a Sentence. You have to list the features one by one from the Sentence.

Examples:
#Few In Context learning Examples

Sample INPUT:
Sentence: This fantastic home boasts 3 spacious bedrooms, modern fully tiled bathroom with spa, and separate laundry with additional toilet, fully landscaped rear garden with water tank leading to the remote control double lock up garage.

Sample OUTPUT:
List of Features:
 1. 3 bedrooms
 2. Spacious bedrooms
 3. Fully tiled bathroom
 4. Bathroom with spa
 5. Separate laundry
 6. Additional toilet
 7. Fully landscaped rear garden
 8. Garden with water tank
 9. Remote control double lock up garage

Figure 5: Prompt Template for LLM to extract list of features from a sentence

Prompt
*You are given a List of Features and a set of uploaded images.
 You have to verify whether a particular feature is "Visible" or "Not Visible" in the images.*

Examples:
#Few In Context learning Examples

Sample INPUT:
 Is the feature-'Lace veranda' is visible in the uploaded images? Answer 'Yes' or 'No'. If 'Yes', then mention the image number.
 Is the feature-'Corner lot' is visible in the uploaded images? Answer 'Yes' or 'No'. If 'Yes', then mention the image number.
 Is the feature-'Hardwood floors' is visible in the uploaded images? Answer 'Yes' or 'No'. If 'Yes', then mention the image number.

Sample OUTPUT:
 Lace veranda: Yes, Visible in Image 1
 Corner lot: No.
 Hardwood floors: Yes, Visible in Image 1, Image 2, Image 4

Figure 6: Prompt Template for GPT-4V to list visible and not visible image features

Prompt
*You are given a Features List and a House Linearized Graph.
 You have to only list those features from the 'Feature List' that are not supported by the 'House Linearized Graph'.*

Examples:
#Few In Context learning Examples

INPUT:
*#Not Visible Image Features List
 #House Linearized Graph*

OUTPUT:
#List of Hallucinated Features

Figure 7: Prompt Template for LLM to list hallucinated features

Prompt
 You are given two lists: List-1, List-2 and a House Linearized Graph. Your task is to **Classify the features of List-2 into two groups:**

Salient Features: The features from List-2 which are similar with any of the features of List-1 or supported by the 'House Linearized Graph'
Not-Salient Features: All the remaining features from List-2 that are not classified as Salient Features

INPUT:
 #List-1 :: Visible Image Features List from Ground-Truth Text (Salient Image Features List)
 #List-2 :: Visible Image Features List from the LMMs (Salient and Not-Salient Image Features List)
 #House Linearized Graph

OUTPUT:
 #List of Salient Image Features and Not-Salient Image Features

Figure 8: Prompt Template for LLM to list salient and not salient image features

Prompt Input to LLM:
 The feature of a House image: "**Double-fronted block facade home**" is an important feature for a real-estate advertising, because ..? "Complete within one sentence".

Output from Zero-Shot LLM (ChatGPT-3.5):
 The feature of a House image: "**Double-fronted block facade home**" is an important feature for real-estate advertising because it signifies architectural distinction, spaciousness, and curb appeal, drawing attention and interest from potential buyers.

Prompt Input to LLM:
 The feature of a House image: "**Black Roof**" is not an important feature for a real-estate advertising, because ..? "Complete within one sentence".

Output from Zero-Shot LLM (ChatGPT-3.5):
 The feature of a House image: "**Black Roof**" is not an important feature for real-estate advertising because it is a relatively common and neutral characteristic that does not significantly enhance the property's appeal or value.

Figure 9: Prompt Template for LLM to generate rationale for salient features and not-salient features

Consider the following Text:
 #Text:.....

Remove the following features from the Text :
 #List of Not-salient and Hallucinated Features

Update the summary by considering the following features:
 #List of Salient Features

Note: Do not make any other modification of the Summary.

Figure 10: Prompt Template for LLM to do post-hoc correction of the generated text according to the feedback of the critic model

Consider the Linearized Graph/Tabular Data and the Images.
 You are given a "List of Features".

Your task is to list only those features from the "List of Features", that are not aligned with the Linearized Graph/Tabular Data or the Images.

INPUT:
 #Linearized Graph/Tabular Data
 #Images
 #List of Features

OUTPUT:
 #List of Faithful Features

Figure 11: Prompt Template for GPT-4V to list faithful and salient features from the ground-truth text

Consider the following "List of Features".

Now generate a real-estate advertising summary with all the features from the "List of Features".

INPUT:

#List of Features

OUTPUT:

#Advertising Text

Figure 12: Prompt Template for LLM to make a paragraph with the faithful and salient features

House Knowledge Graph and Images:

The Knowledge Graph is centered on 'House'. It branches into several categories:

- property-type:** House
- location:** Essendon
- leased date:** Sat 30-May-15
- agency name:** Nelson Alexander Real Estate - Essendon
- address:** 36 Edward St, Essendon VIC 3040, Australia
- nearest school:** Essendon East Keilor District College Senior Campus (gender-type: Co-Ed)
- nearest train station:** Essendon Railway Station (type: Secondary)
- agency address:** 1019 Mount Alexander Road Essendon Vic 3040
- price and features:** sold price (1380000), num. of bedrooms (3), num. of bathrooms (1), num. of parking spaces (2)
- amenities:** courtyard, nearest park, dining room, 9 mins walking distance to closest railway station

The Images section contains three photographs:

- Top left: Exterior view of a yellow house with a white porch and picket fence.
- Top right: Interior view of a bright living room with large windows.
- Bottom: Close-up view of the front porch with white railings and a small garden.

Pre-processed Ground-truth text:

Stunning Edwardian Charm in Prestige Essendon Location!: This grand home features three spacious bedrooms, a central bathroom, elegant formal lounge, dining room, and adjoining kitchen. Enjoy high ceilings, lead-light windows, a cellar, hallway storerooms, and a wrap-around verandah overlooking the expansive north-facing backyard. With a garage, carport, and walking distance to local parks and Essendon Station, this elevated corner block boasts a total land area of 603sqm. Don't miss out on this rare opportunity to own a piece of Edwardian history in one of Essendon's most sought-after neighborhoods!

Our model:

Spacious 3-bedroom House in Essendon with Picket Fence and White Porch: This advertisement is for a charming classical Victorian home in the urban area of Essendon, Melbourne. The house has a picket fence surrounding the front yard, a small porch with a white railing and two small windows, a small tree, and a small garden. The key features of the image are the yellow exterior and white trim, small garden, and white wooden porch with large windows and wooden frames. Located on a generous block, this charming home boasts original period features that add to its character. The spacious living room is perfect for families looking for a cozy, well-maintained, and well-located house in Essendon. Additional information provided includes the address (36 Edward St, Essendon VIC 3040, Australia), sold price (\$1380000), leased date (Sat 30-May-15), agency name (Nelson Alexander Real Estate - Essendon), agency address (1019 Mount Alexander Road Essendon Vic 3040), number of bedrooms (3), number of bathrooms (1), number of parking spaces (2), whether it has a courtyard, a dining room, a nearby park, the number of carport spaces (1), the number of garage spaces (1), proximity to the nearest train station (9 mins walking distance), and the nearest school (Essendon East Keilor District College Senior Campus). The image key features are also highlighted, making this property an ideal choice for those seeking a Victorian home with period charm in Essendon.

Woodpecker model:

Charming 3-Bedroom House in Essendon with Picket Fence and White Porch: This advertisement is for a spacious 3-bedroom house located in the desirable area of Essendon, Melbourne. The house features a charming yellow exterior with white trim, giving it a warm and inviting feel. The front yard is enclosed by a classic picket fence, adding to the overall charm of the property. Upon entering the house, you are greeted by a small porch with a white railing, providing the perfect spot to relax and enjoy the surroundings. The porch is adorned with two large windows, allowing for plenty of natural light to fill the interior space. The house is well-maintained and in good condition, with a small garden and a tree adding to the overall appeal. The key features of the image include the yellow exterior with white trim, the small wooden front door, and the white wooden porch with large windows and wooden frames. In addition to the visual features, the House Linearized Graph provides important information about the property. The house is located at 36 Edward St, Essendon VIC 3040, Australia. It was sold for \$1380000 and was leased on Sat 30-May-15. The agency responsible for the property is Nelson Alexander Real Estate - Essendon, located at 1019 Mount Alexander Road Essendon Vic 3040. The house offers 3 bedrooms, 1 bathroom, and 2 parking spaces, including 1 carport and 1 garage. It also features a courtyard and a dining room. The nearest park is within walking distance, providing a convenient outdoor space for recreation. For families looking for a cozy and well-located house, this advertisement is perfect. The property offers a spacious interior, a picket fence, and a small garden, creating a welcoming and comfortable atmosphere. The proximity to Essendon Railway Station, which is just a 9-minute walk away, adds to the convenience of the location. The nearest school, Essendon East Keilor District College Senior Campus, is also within close proximity, making it an ideal choice for families with school-aged children. Don't miss out on the opportunity to make this charming house in Essendon your new home. Contact Nelson Alexander Real Estate - Essendon today to arrange a viewing.

LURE model:

The house is a 3-bedroom house with 1 bathroom and 2 parking spaces, located in a quiet neighborhood with easy access to parks and public transportation. It has a beautiful outdoor living area and a modern kitchen and living room with plenty of storage space. The bedrooms are spacious and bright, and the house is equipped with ducted heating and cooling. The house is located in Essendon, just minutes away from local shops, cafes, and restaurants. The area has several parks and reserves, perfect for recreation. The location is just a few minutes' walk away from Essendon Railway Station, which is a major transport hub. The house is in close proximity to several schools, including Essendon East Keilor District College Senior Campus, which is a CoEd school. Overall, this house is a great option for those looking for a charming and convenient place to live.

MiniGPT4 model:

Spacious 3-bedroom House in Essendon with Picket Fence and White Porch: This advertisement is for a charming, small yellow house in the urban area of Essendon, Melbourne. The house has a picket fence surrounding the front yard, a small porch with a white railing and two small windows, a small tree, and a small garden. The house is well-maintained and in good condition. The key features of the image are the yellow exterior and white trim, small garden, small wooden front door, and white wooden porch with large windows and wooden frames. The House Linearized Graph provides additional information about the property, including its address (36 Edward St, Essendon VIC 3040, Australia), sold price (\$1380000), leased date (Sat 30-May-15), agency name (Nelson Alexander Real Estate - Essendon), agency address (1019 Mount Alexander Road Essendon Vic 3040), number of bedrooms (3), number of bathrooms (1), number of parking spaces (2), whether it has a courtyard, a dining room, a nearby park, the number of carport spaces (1), the number of garage spaces (1), proximity to the nearest train station (9 mins walking distance), and the nearest school (Essendon East Keilor District College Senior Campus). The image key features are also highlighted. This advertisement is perfect for families looking for a cozy, well-maintained, and well-located house in Essendon with a picket fence and a small garden.

Figure 13: Example of generated text on the House dataset.

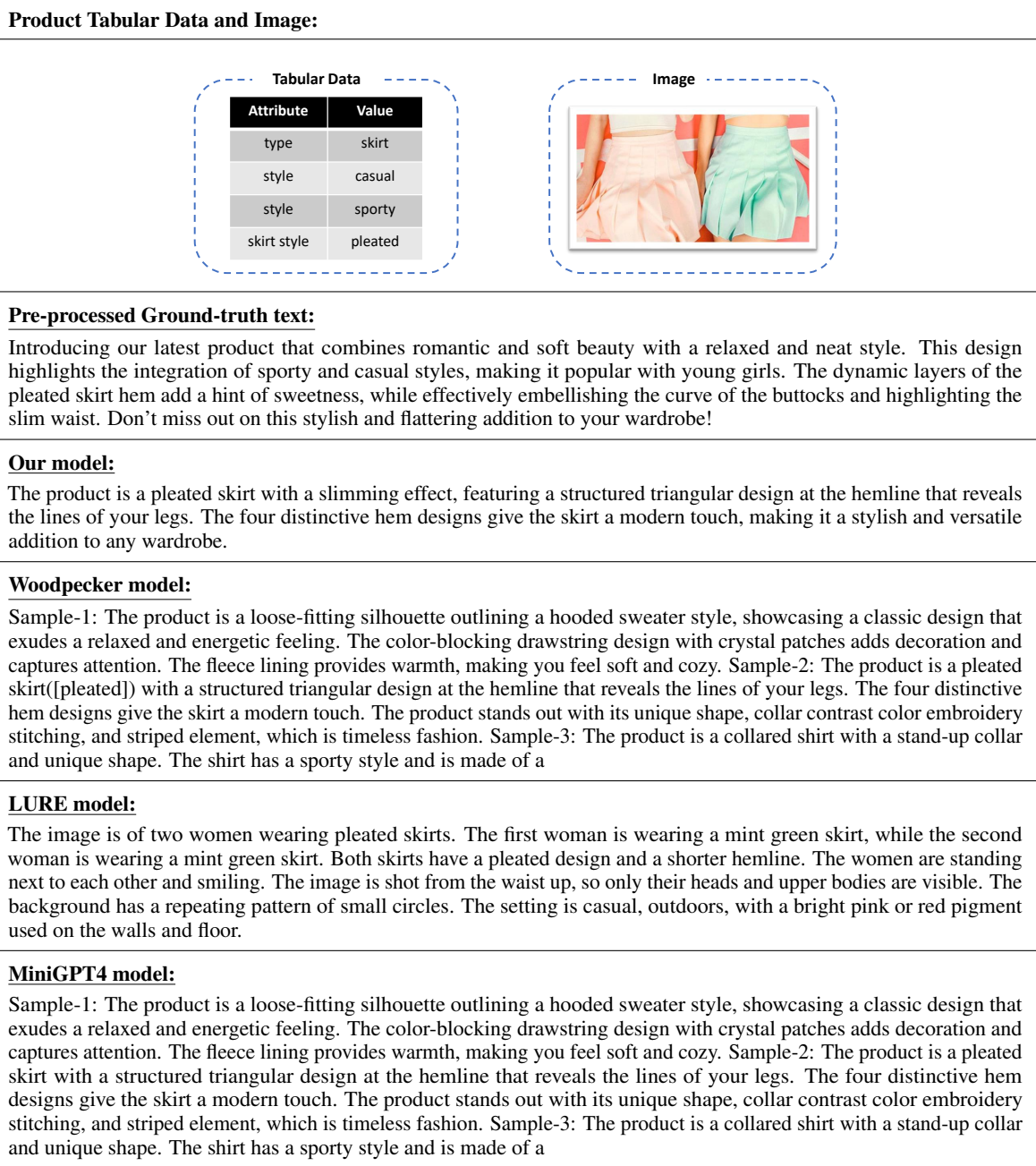


Figure 14: Example of generated text on the Product dataset.