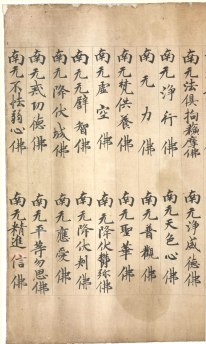# Appendix: Examples from Benchmark

Example 1: Handwritten Character Recognition

Prompt

(a) Input Image

You are an expert in recognizing ancient texts. This is an image of a vertically oriented, handwritten ancient text in traditional Chinese characters. Please use your visual capabilities to perform OCR and extract the text, and only provide me with the OCR result.

Answer

南无法俱拘苏摩佛
南无净威德佛
南无净行佛
南无天色心佛
南无力佛
南无普观佛
南无梵供养佛
南无圣华佛
南无虚空佛
南无降伏郁弥佛
南无无譬智佛
南无降伏刺佛
南无降伏城佛
南无应爱佛
南无戒功德佛
南无平等勿思佛
南无不怯弱心佛
南无精进信佛

Example 2: Allograph Normalization

(a) Input Image

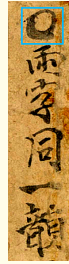Please normalize the allograph of this character in this image.
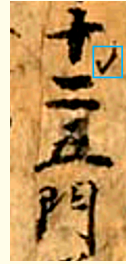
快

Example 3-1: Writing Symbol Detection

(a) Input (b) Sample 1 (c) Sample 2 (d) Sample 3 (e) Sample 4 (f) Sample 5

Multiple-choice:

Assume you are a specialist in bibliography, examining a calligraphy scroll for distinctive symbols. Please identify which specific symbol is most likely represented in the image below. Choose one from the following options: "Hierarchy Symbol", "Repetition Mark Symbol", "Tick Symbol", "Deletion Symbol", or "Pause Symbol". If none of these are applicable, please output "Not found."

Chain-of-Thought (CoT):

Assume you are a specialist in bibliography, examining a calligraphy scroll for distinctive symbols. Please identify which specific symbol is most likely represented in the image below. Choose one from the following options: "Hierarchy Symbol", "Repetition Mark Symbol", "Tick Symbol", "Deletion Symbol", or "Pause Symbol". If none of these are applicable, please output "Not found."
Step 1. Identify the part of the text in the image, and search for possible special symbols in the areas outside or on the text itself.
Step 2. Analyze the characteristics, functions, and possible positions of the symbols: hierarchical symbol, repetition mark symbol, tick symbol, deletion symbol, and pause symbol.
Step 3. Compare the image characteristics with the special symbol characteristics and make an overall judgment about which special symbol is most likely present.
Step 4. Choose the most likely symbol from "Hierarchy Symbol", "Repetition Mark Symbol", "Tick Symbol", "Deletion Symbol" and "Pause Symbol" and output the result. If no symbol is found, output "Not Found".

Knowledge Retrieval:

Assume you are a specialist in bibliography, examining a calligraphy scroll for distinctive symbols. Here are some examples, with the special symbols highlighted in blue boxes.
1. The image below contains the "Hierarchy Symbol": <sample1>
2. The image below contains the "Repetition Mark Symbol": <sample2>
3. The image below contains the "Tick Symbol": <sample3>
4. The image below contains the "Deletion Symbol": <sample4>
5. The image below contains the "Pause Symbol": <sample5>
Please identify which specific symbol is most likely represented in the image below. Choose one from the following options: "Hierarchy Symbol", "Repetition Mark Symbol", "Tick Symbol", "Deletion Symbol", or "Pause Symbol". If none of these are applicable, please output "Not found."

Deletion Symbol

Example 3-2: Writing Symbol Detection (Binary)
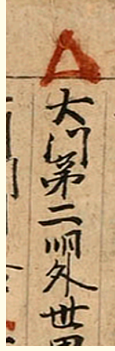
(a) Input Image

Please look for the following special symbol in the image: abbreviation symbol.
It is written in its original form, appears in black ink like the main text, functions as a replacement for previously mentioned words, and is usually located below the annotations of repeated characters.
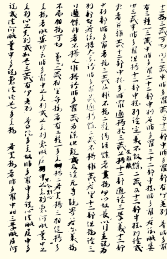Please answer "Yes" or "No."

Answer

No

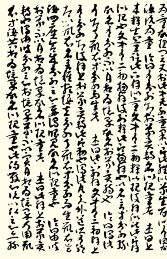**Example 4: Calligraphy Style Classification**
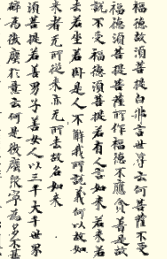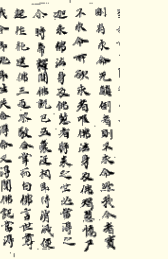
(a) Input Image   (b) Sample 1   (c) Sample 2   (d) Sample 3   (e) Sample 4

Multiple-choice:
Please determine which Chinese calligraphy style is the closest to the one in the image. Please choose one from "Running Script", "Cursive Script", "Regular Script", and "Clerical Script" that is most similar to the image.

Chain-of-Thought (CoT):
Please determine which Chinese calligraphy style is the closest to the one in the image. Please choose one from "Running Script", "Cursive Script", "Regular Script", and "Clerical Script" that is most similar to the image.
Step 1. Analyze the image, observe the overall style, and initially classify it into broad categories, excluding some categories.
Step 2. Analyze the stroke characteristics of the four calligraphy styles and further exclude some.
Step 3. Evaluate the structural features of the four calligraphy styles.
Step 4. Make a comprehensive judgment, determine the calligraphy style that the image most closely resembles, and output the final answer.

Knowledge Retrieval:
This is an example of Running Script Calligraphy: <sample1>
This is an example of Cursive Script Calligraphy: <sample2>
This is an example of Regular Script Calligraphy: <sanple3>
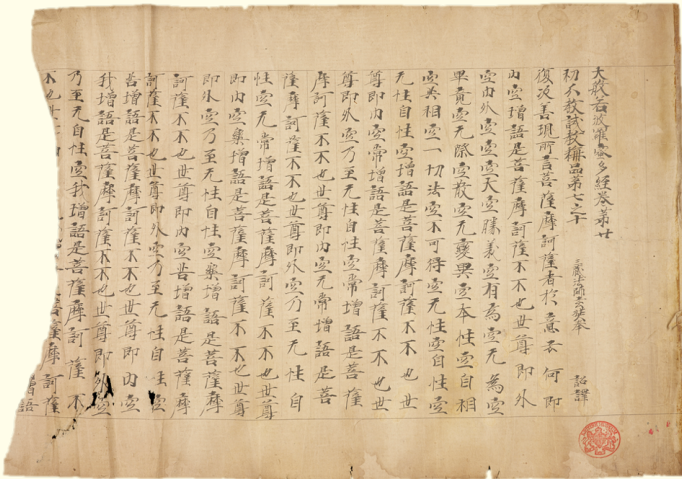This is an example of Clerical Script Calligraphy: <sample4>
Please determine which Chinese calligraphy style is the closest to the one in the image. Please choose one from "Running Script", "Cursive Script", "Regular Script", and "Clerical Script" that is most similar to the image.

Answer

Cursive Script

Example 5: Manuscript Damage Assessment

Prompt

(a) Input Image

Please choose one of the four options below to assess the damage severity.
A. Left edge intact, right edge intact
B. Left edge damaged, right edge intact
C. Left edge intact, right edge damaged
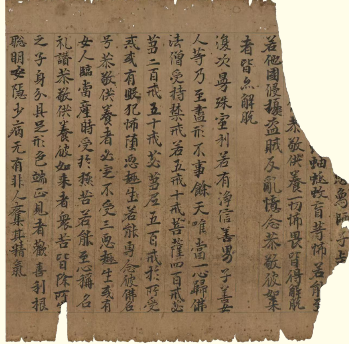D. Left edge damaged, right edge damaged
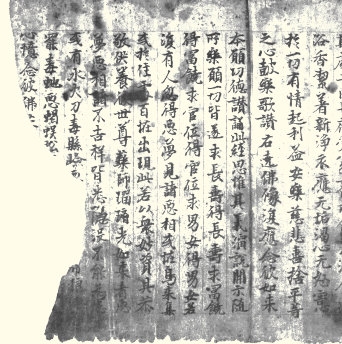
Answer

C. Left edge intact, right edge damaged

Example 6: Fragmented manuscript Restoration

Example 6-1: Yes/no Judgement

Prompt

(a) Input Image 1 (b) Input Image 2

Assume you are an expert in fragment restoration, repairing these pieces like a jigsaw puzzle. I will provide you with two fragment images. Please help me determine whether these two pieces can be joined together.

Answer

Yes

Example 6-2: Likelihood Estimation
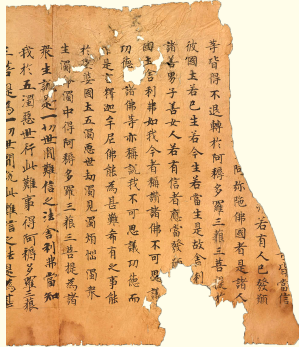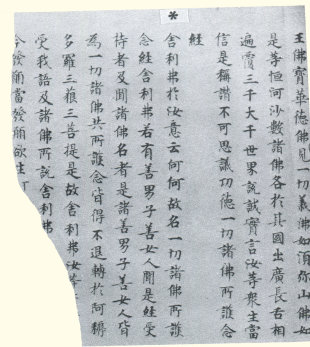
Prompt

(a) Input Image 1 (b) Input Image 2

Assume you are an expert in fragment restoration, repairing these pieces like a puzzle. I will provide you with two fragment images. Please help me determine in which direction these two pieces should be joined based on the given images. Note: Do not write any code! Only use your visual ability. Please give a matching score from 0 to 100, where 100 means they can be completely joined together.

Answer

100

Example 6-3: Relative Positioning Hypotheses

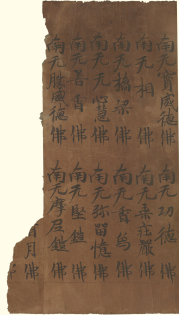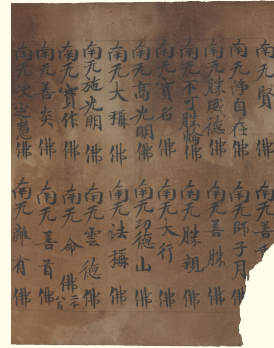(a) Input Image 1   (b) Input Image 2

Assume you are an expert in fragment restoration, repairing these pieces like a jigsaw puzzle. I will provide you with two fragment images. Please help me determine in which direction these two pieces should be joined based on the given images.

Answer

Fragment 1 is on the right, fragment 2 is on the left.

Example 7: Icon Recognition

Prompt

(a) Input Image 1   (b) Input Image 2   (c) Input Image 3   (d) Input Image 4

These are four images of Dunhuang decorative patterns: three of them are Zaojing (caisson ceiling) patterns, and one is a Huagai (canopy) pattern. Please distinguish and output the category of each image in sequence.

Answer

The pattern of Zaojing; The pattern of Zaojing; The pattern of Huagai; The pattern of Zaojing.

Example 8: Chronological Attribution

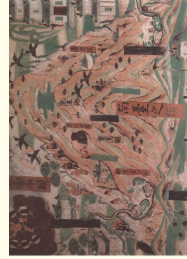| (a) Input Image | (b) Sample 1 | (c) Sample 2 | (d) Sample 3 | (e) Sample 4 |

Multiple-choice:
This is a Dunhuang mural. Please determine the Chinese dynasty it most closely resembles. Choose the most appropriate period from the following options: "Tang Dynasty", "Wei-Jin and Northern and Southern Dynasties", "Five Dynasties", or "Yuan Dynasty".

Chain-of-Thought (CoT):
This is a Dunhuang mural. Please determine the Chinese dynasty it most closely resembles. Choose the most appropriate period from the following options: "Tang Dynasty", "Wei-Jin and Northern and Southern Dynasties", "Five Dynasties" and "Yuan Dynasty".
Step 1. Analyze the characteristics of Dunhuang murals from the Wei-Jin and Northern and Southern Dynasties, Five Dynasties, Tang Dynasty, and Yuan Dynasty in terms of figure modeling, clothing styles, color usage, and other aspects.
Step 2. Identify the figures in the mural, and analyze the characteristics of the figures' modeling, clothing styles, and color usage in the image.
Step 3. Compare the characteristics of the image with the Dunhuang mural characteristics described in Step 1 and Step 2, and make an overall judgment of which period the image's features are closest to.
Step 4. Choose the most similar period from "Tang Dynasty", "Wei-Jin and Northern and Southern Dynasties", "Five Dynasties" and "Yuan Dynasty" and provide the output.

Knowledge Retrieval:
Here are several Dunhuang murals from different periods.
Image 1 is from the period of "Wei-Jin and Northern and Southern Dynasties": <sample1>
Image 2 is from the period of "Tang Dynasty": <sample2>
Image 3 is from the period of "Five Dynasties": <sanple3>
Image 4 is from the period of "Yuan Dynasty": <sample4>
Based on the above information, please infer and determine the Chinese dynasty the following image belongs to. Choose the most appropriate period from the following options: "Tang Dynasty", "Wei-Jin and Northern and Southern Dynasties", "Five Dynasties" and "Yuan Dynasty".

Tang Dynasty.

Example 8-2: Binary

(a) Input Image 1
(It is from Tang Dynasty)

(b) Input Image 2
(It is from Yuan Dynasty)

Below are two Dunhuang murals from different periods. Please determine whether the date of Image 1 is earlier than that of Image 2.
Please answer "Yes" or "No".

Answer

Yes

Example 9: Artwork Captioning

(a) Input Image

This is an mural of Dunhuang Grottoes. Please describe the content of the image with an appreciative tone.

Answer

This image features nine bodhisattvas, led by Manjushri, including Mahasthamaprapta, Akasagarbha, Bhaisajyaraja, Baoyue, Manjushri, Wuliangli, Badawopala, Baoji, and others. They are either seated or standing, arranged in a staggered manner with graceful postures. Their dark brown bodies are adorned with luxurious silk garments, jeweled necklaces, and intricate ornaments. The contrast of vibrant colors in red and green, especially with the bright halos around them, makes the image particularly striking and unique. Behind Manjushri is the inscription of the glorious and dignified king, with a crown for long travels, a tablet, and deep robes, presenting a distinct Chinese imperial attire.