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Image-Text-to-Text | Transformers | Safetensors | AIDC-AI/Ovis-dataset

English | Chinese | ovis2_5 | text-generation | MLLM | conversational

custom_code | arxiv:2508.11737 | arxiv:2405.20797 | License: apache-2.0

Train | Deploy | Use this model

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Safetensors Model size 9.17B params | Tensor type BF16 | Chat template | Files info

Inference Providers NEW

Image-Text-to-Text

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Model tree for `AIDC-AI/Ovis2.5-9B`

Adapters 1 model

Dataset used to train `AIDC-AI/Ovis2.5-9B`

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Collection including `AIDC-AI/Ovis2.5-9B`

Ovis2.5 Collection

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Ovis2.5-9B

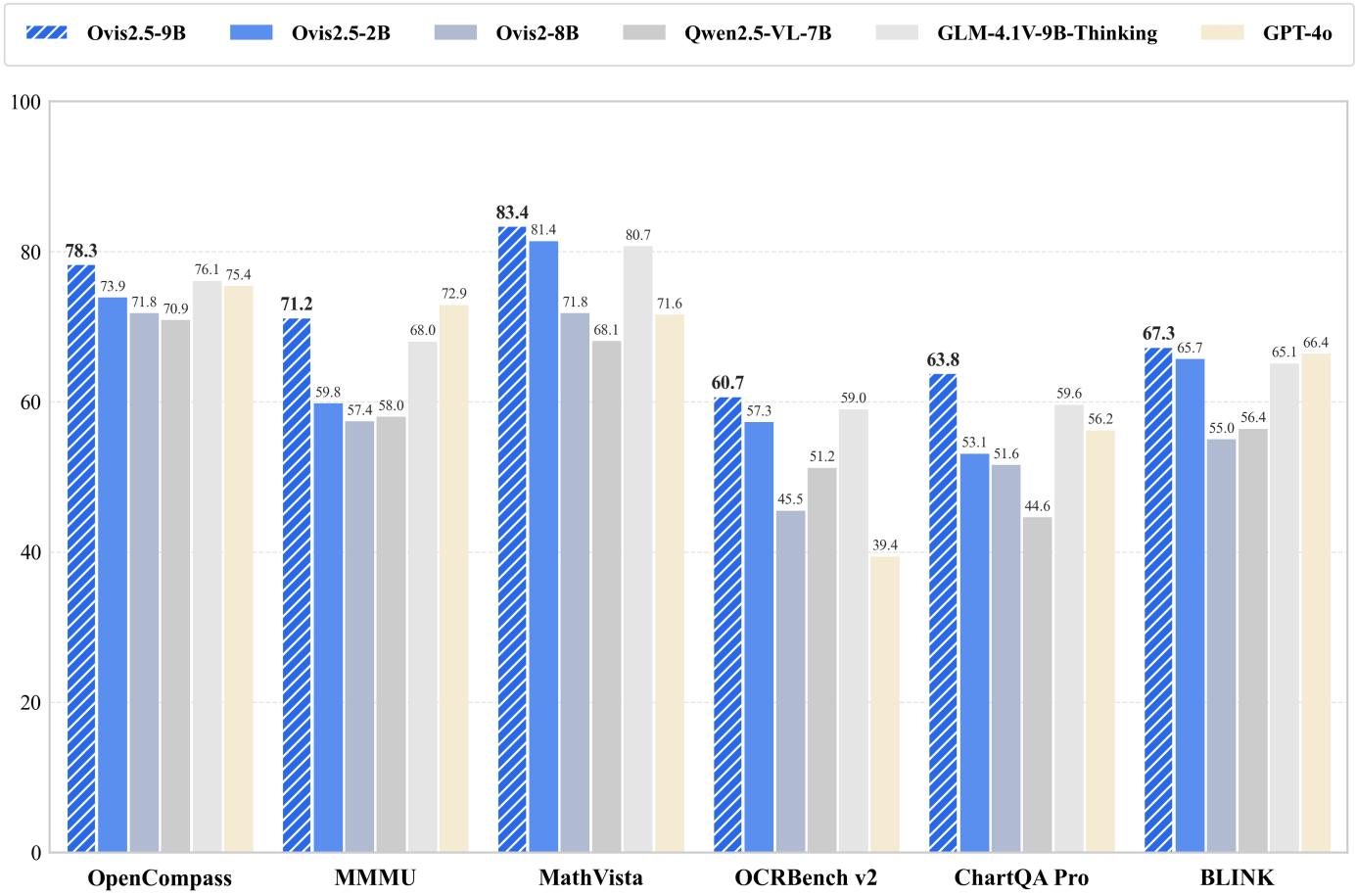
Ovis

Technical Report Ovis2.5 | GitHub AIDC-AI/Ovis | HF Spaces AIDC-AI/Ovis2.5-9B | Models AIDC-AI/Ovis2.5

Introduction

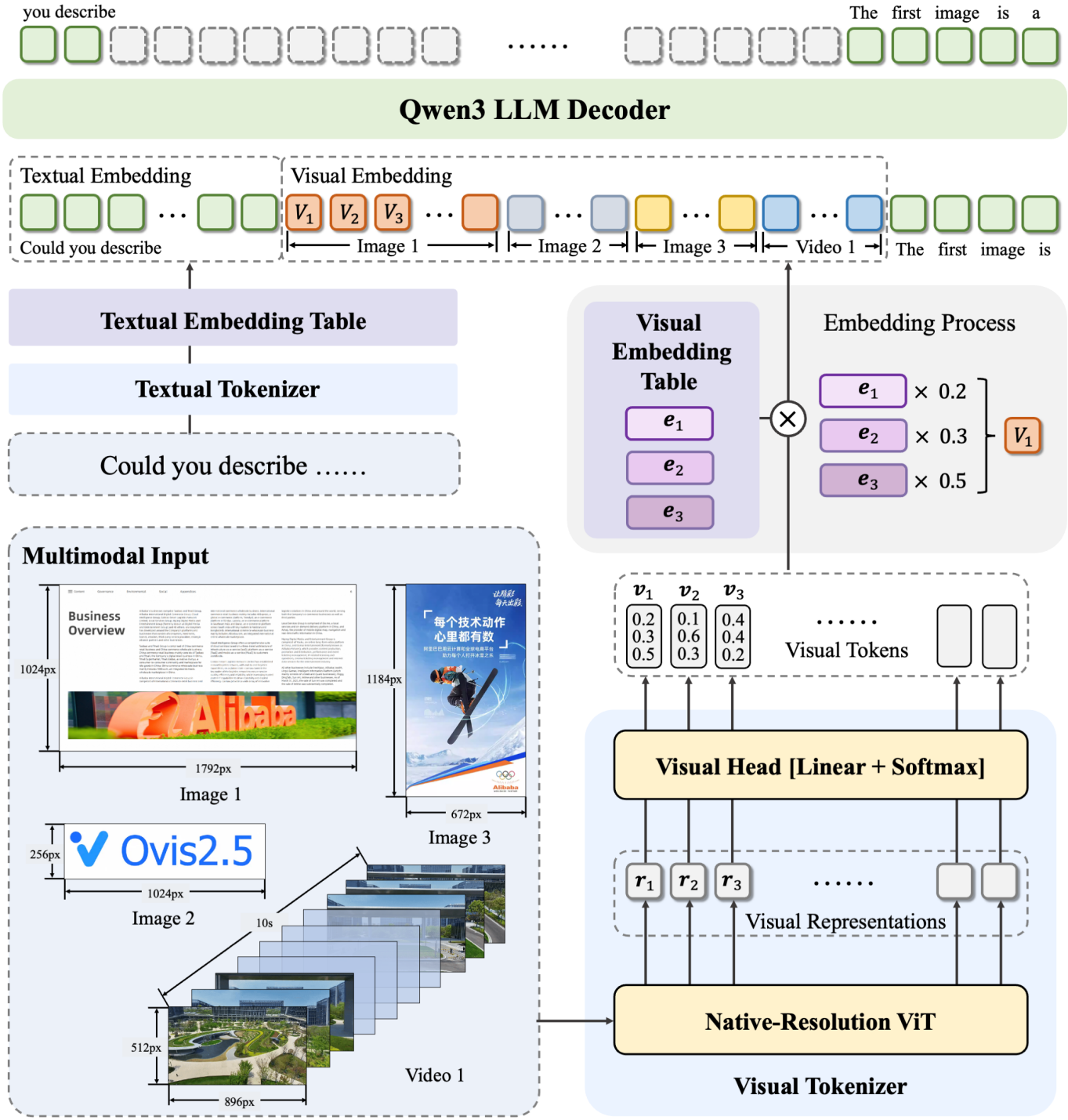
We are pleased to announce the release of **Ovis2.5**, the successor to Ovis2, designed for native-resolution visual perception and enhanced multimodal reasoning. It integrates a native-resolution vision transformer (NaViT) that processes images at their original, variable resolutions, eliminating the need for fixed-resolution tiling and preserving both fine details and global layout—crucial for visually dense content such as charts and diagrams. To strengthen reasoning, Ovis2.5 is trained not only on linear chain-of-thought (CoT) but also on reflective reasoning, including self-checking and revision. This advanced capability is available at inference as an optional *thinking mode*, enabling users to trade latency for higher accuracy on complex inputs.

Building on these advances, **Ovis2.5-9B** achieves an average score of 78.3 on the OpenCompass multimodal evaluation suite (SOTA among open-source MLLMs under 40B parameters), while the lightweight **Ovis2.5-2B** scores 73.9, continuing the “small model, big performance” philosophy for resource-constrained scenarios.



Key Features

- **Native-Resolution Perception** — NaViT vision encoder preserves fine details and global structure without lossy tiling.
- **Deep-Reasoning Capability** — Optional *thinking mode* for self-checking and revision beyond linear CoT. *Thinking budget* supported.
- **Chart & Document OCR** — State-of-the-art at its scale for complex chart analysis, document understanding (including tables and forms), and OCR.
- **Broad Task Coverage** — Demonstrates leading performance on image reasoning, video understanding, and grounding benchmarks, showcasing strong general multimodal capability.



Quick Inference

Below is a simple example demonstrating how to run Ovis2.5 with a single image input. For accelerated inference with **vLLM**, refer to GitHub.

First, install the required dependencies:

```
pip install torch==2.4.0 transformers==4.51.3 numpy==1.25.0 pillow==10.3.0 moviepy
pip install flash-attn==2.7.0.post2 --no-build-isolation
```

Then, run the following code.

```
import torch
import requests
from PIL import Image
from transformers import AutoModelForCausalLM

MODEL_PATH = "AIDC-AI/Ovis2.5-9B"

# Thinking mode & budget
enable_thinking = True
enable_thinking_budget = True  # Only effective if enable_thinking is True.

# Total tokens for thinking + answer. Ensure: max_new_tokens > thinking_budget + 2
max_new_tokens = 3072
thinking_budget = 2048

model = AutoModelForCausalLM.from_pretrained(
    MODEL_PATH,
    torch_dtype=torch.bfloat16,
    trust_remote_code=True
).cuda()

messages = [{
    "role": "user",
    "content": [
        {"type": "image", "image": Image.open(requests.get("https://cdn-uploads.hu
        {"type": "text", "text": "Calculate the sum of the numbers in the middle b
    ],
}]

input_ids, pixel_values, grid_thws = model.preprocess_inputs(
    messages=messages,
    add_generation_prompt=True,
```

```
    enable_thinking=enable_thinking
)
input_ids = input_ids.cuda()
pixel_values = pixel_values.cuda() if pixel_values is not None else None
grid_thws = grid_thws.cuda() if grid_thws is not None else None

outputs = model.generate(
    inputs=input_ids,
    pixel_values=pixel_values,
    grid_thws=grid_thws,
    enable_thinking=enable_thinking,
    enable_thinking_budget=enable_thinking_budget,
    max_new_tokens=max_new_tokens,
    thinking_budget=thinking_budget,
)

response = model.text_tokenizer.decode(outputs[0], skip_special_tokens=True)
print(response)
```

The thinking and thinking budget logic can be applied in the same way for multi-image, video and pure text scenarios.

Note (answer extraction for CoT/Thinking): To make evaluation and usage easier, we recommend appending a fixed suffix to prompts when using chain-of-thought (CoT) or thinking mode. This ensures the model clearly outputs a final answer that can be extracted programmatically:

```
End your response with 'Final answer: '.
```

For example:

```
Calculate the sum of the numbers in the middle box in figure (c).
End your response with 'Final answer: '.
```

Tip: The sections below include an optional streaming helper (compatible with two-phase thinking/budget runs) and extra inference modes: multi-image, video, and text-only.

▶ Optional: Streaming (Advanced)

▶ Example: Multi-image

▶ Example: Video

▶ Example: Text-only

To enable grounding, end your prompt with `Please provide the bounding box coordinates.` (for boxes) or `Please provide the point coordinates.` (for points). To target a specific object, wrap its description in `<ref>` tags, e.g.:

```
Find the <ref>red apple</ref> in the image. Please provide the bounding box coordi
```

Coordinates are normalized to `[0,1)` with the origin `(0,0)` at the top-left corner of the image.

- Point: `<point>(x,y)</point>`
- Bounding box: `<box>(x1,y1),(x2,y2)</box>` where `(x1,y1)` is top-left, `(x2,y2)` is bottom-right.
- Multiple results can be listed in square brackets: `[<box>(...)</box>,<box>(...)</box> ]`

Example:

```
The image features a serene scene with <ref>three birds</ref>[
  <box>(0.401,0.526),(0.430,0.557)</box>,
  <box>(0.489,0.494),(0.516,0.526)</box>,
  <box>(0.296,0.529),(0.324,0.576)</box>
] flying in formation against a clear blue sky.
```

Model Zoo

Ovis MLLMs	ViT	LLM	Model Weights	Demo
Ovis2.5-2B	siglip2-so400m-patch16-512	Qwen3-1.7B	Huggingface	Space
Ovis2.5-9B	siglip2-so400m-patch16-512	Qwen3-8B	Huggingface	Space

Performance

We evaluate Ovis2.5 using VLMEvalKit, as employed in the OpenCompass multimodal and reasoning evaluation suite.

Performance of Ovis2.5-9B and comparison models on the OpenCompass suite. Abbreviations: MMB = MMBenchV11; MMS = MMStar; MMMU = MMMU-Val; HB = HallusionBench; OCR = OCRBench.

Model	MMB	MMS	MMMU	MathVista	HB	AI2D	OCR	MMVet	Avg
Gemini-2.5-Pro	88.3	73.6	74.7	80.9	64.1	89.5	86.2	83.3	80.1
GPT-4o	86.0	70.2	72.9	71.6	57.0	86.3	82.2	76.9	75.4
Ovis2-8B	83.6	64.6	57.4	71.8	56.3	86.6	**89.1**	65.1	71.8
Qwen2.5-VL-7B	82.2	64.1	58.0	68.1	51.9	84.3	88.8	69.7	70.9
InternVL3-8B	82.1	68.7	62.2	70.5	49.0	85.1	88.4	**82.8**	73.6
MiMo-VL-7B-RL-2508	83.9*	72.7*	70.6	79.7*	65.3*	85.3*	88.6	73.4*	77.4*
Keye-VL-8B	79.4*	**75.5**	**71.4**	80.7	**67.0**	86.7	85.1	67.6*	76.7*
GLM-4.1V-9B-Thinking	**85.3**	72.9	68.0	80.7	63.7*	**87.9**	84.2	66.2*	76.1*
Ovis2.5-9B	84.9	72.4	71.2	**83.4**	65.1	87.7	87.9	74.0	**78.3**

Performance of Ovis2.5-9B and comparison models on multimodal reasoning benchmarks. Abbreviations: MPro = MMMU-Pro; MathVerse = MathVerse Vison Only; LV = LogicVista; WM = WeMath; DM = DynaMath.

Model	MMMU	MPro	MathVista	MathVerse	MathVision	LV	WM	DM
Gemini-2.5-Pro	74.7	-	80.9	76.9	69.1	73.8	78.0	56.3
GPT-4o	72.9	-	71.6	49.9	43.8	64.4	50.6	48.5
Ovis2-8B	57.4	34.9	71.8	42.3	25.9	39.4	27.2	20.4
Qwen2.5-VL-7B	58.0	38.3	68.1	41.1	25.4	47.9	36.2	21.8
InternVL3-8B	62.2	42.3*	70.5	38.5	30.0	44.5	39.5	25.7
MiMo-VL-7B-RL-2508	70.6	45.7*	79.7*	**71.6***	**58.5***	**64.5**	65.6*	**48.3***
Keye-VL-8B	**71.4**	39.0*	80.7	59.8	46.0	54.8	60.7	37.3
GLM-4.1V-9B-Thinking	68.0	**57.1**	80.7	68.8*	49.4*	54.1*	63.8	38.9*
Ovis2.5-9B	71.2	54.4	**83.4**	71.1	53.9	61.5	**66.7**	44.1

Citation

If you find Ovis useful, please consider citing the paper

```
@article{lu2025ovis25technicalreport,
  title={Ovis2.5 Technical Report},
  author={Shiyin Lu and Yang Li and Yu Xia and Yuwei Hu and Shanshan Zhao and Yanc
  year={2025},
  journal={arXiv:2508.11737}
```

```
}

@article{lu2024ovis,
  title={Ovis: Structural Embedding Alignment for Multimodal Large Language Model}
  author={Shiyin Lu and Yang Li and Qing-Guo Chen and Zhao Xu and Weihua Luo and K
  year={2024},
  journal={arXiv:2405.20797}
}
```

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