LLaVA

> **Demo Environment**

Development board: Jetson Orin series motherboard

SSD: 128G

> **Tutorial application scope**: Whether the motherboard can run is related to the available memory of the system. The user's own environment and the programs running in the background may cause the model to fail to run.

Motherboard model	Run directly with Ollama	Run with Open WebUI
Jetson Orin NX 16GB	√	√
Jetson Orin NX 8GB	√	√
Jetson Orin Nano 8GB	√	×
Jetson Orin Nano 4GB	×	×

LLaVA (Large-scale Language and Vision Assistant) is a multimodal model that aims to achieve general vision and language understanding by combining visual encoders and large-scale language models.

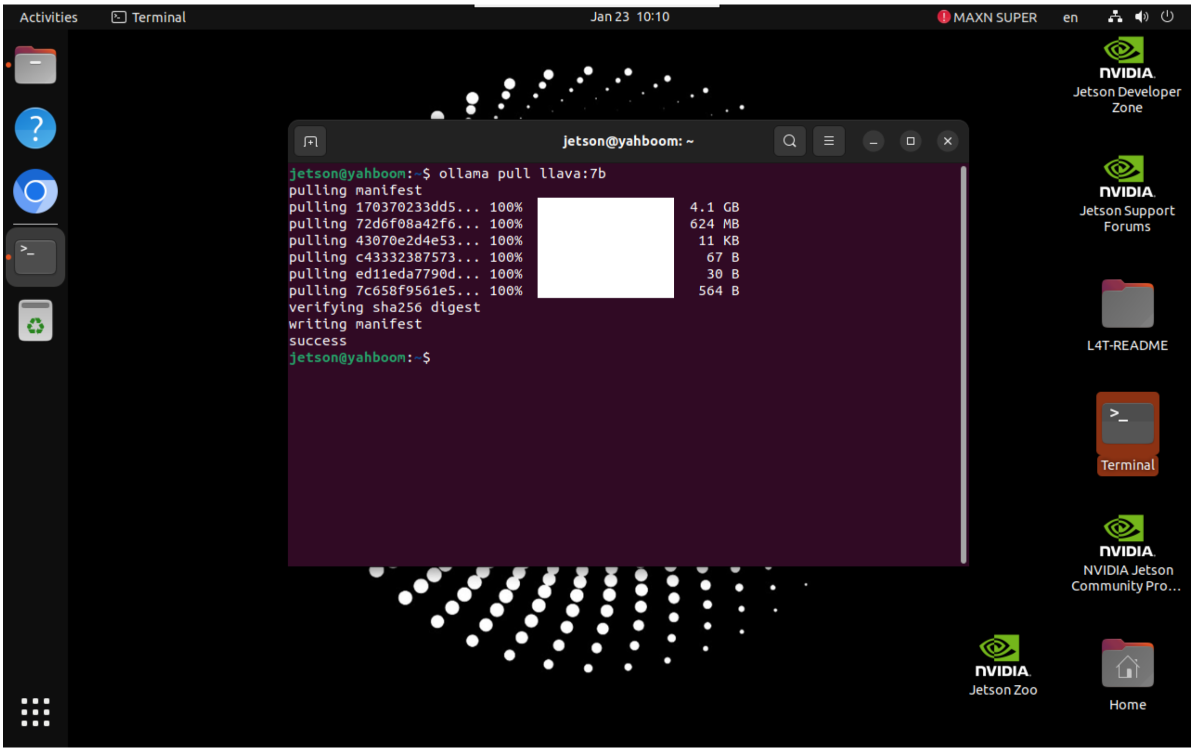
1. Model scale

Model	Parameters
LLaVA	7B
LLaVA	13B
LLaVA	34B

2. Pull LLaVA

Using the pull command will automatically pull the model from the Ollama model library:

```
ollama pull llava:7b
```



```
jetson@yahboom:~$ ollama pull llava:7b
pulling manifest
pulling 170370233dd5... 100%                      4.1 GB
pulling 72d6f08a42f6... 100%                      624 MB
pulling 43070e2d4e53... 100%                       11 KB
pulling c43332387573... 100%                        67 B
pulling ed11eda7790d... 100%                        30 B
pulling 7c658f9561e5... 100%                       564 B
verifying sha256 digest
writing manifest
success
jetson@yahboom:~$
```

3. Use LLaVA

Use LLaVA to identify local image content.

3.1. Run LLaVA

If the system does not have a running model, the system will automatically pull the LLaVA 7B model and run it:

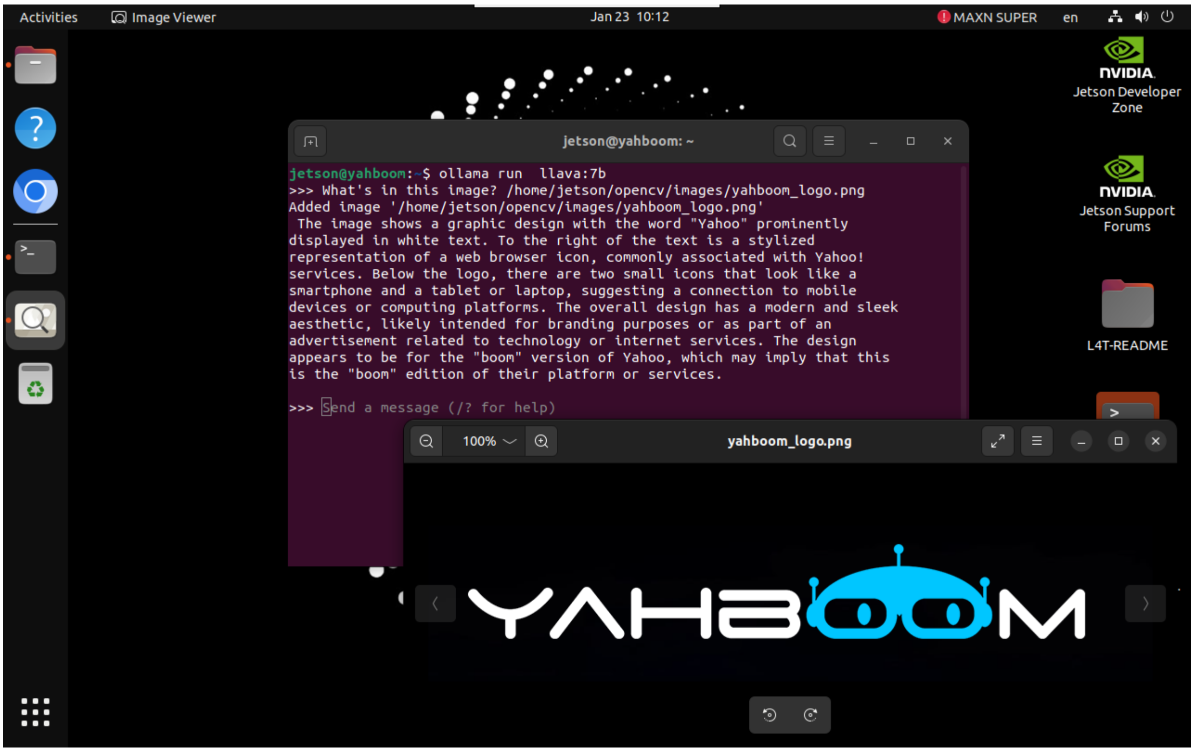
```
ollama run llava:7b
```

3.2. Have a conversation

```
what's in this image? /home/jetson/opencv/images/yahboom_logo.png
```

The time to reply to the question depends on the hardware configuration, so be patient!

```
If the mirror does not have the corresponding picture, you can download the
picture yourself (the resolution should not be too large) and put the picture
path after the question!
```

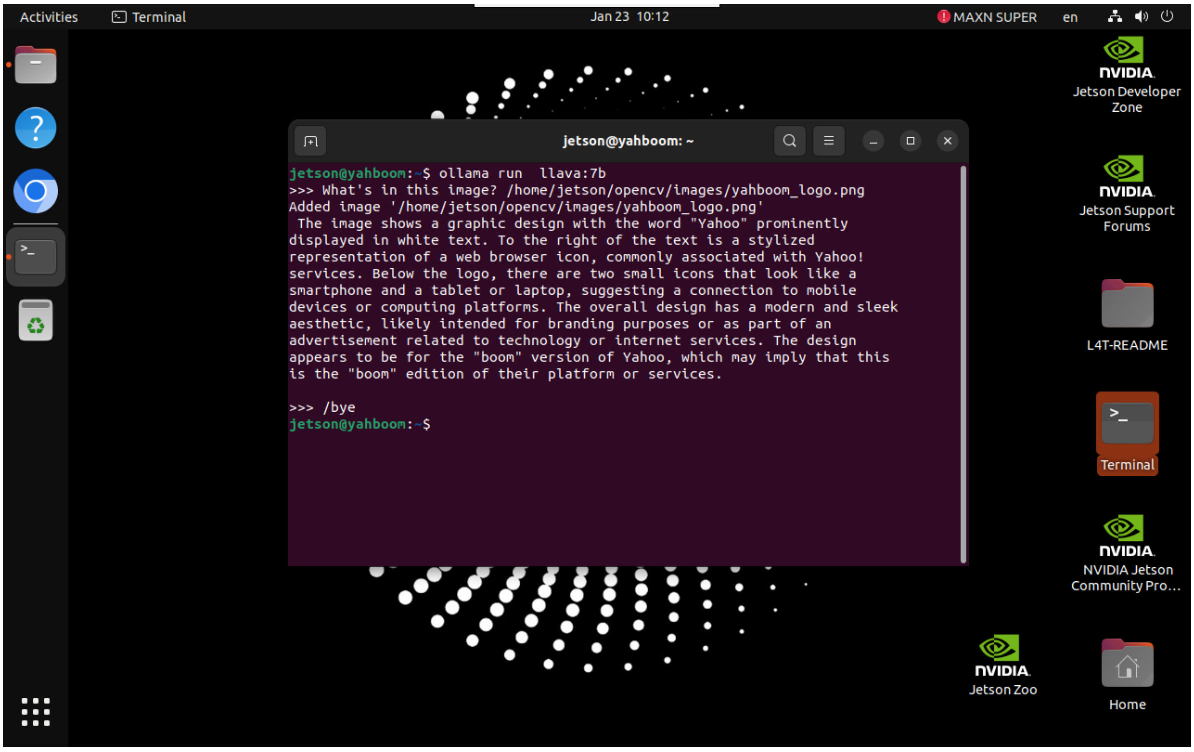


```
jetson@yahboom:~$ ollama run  llava:7b
>>> What's in this image? /home/jetson/opencv/images/yahboom_logo.png
Added image '/home/jetson/opencv/images/yahboom_logo.png'
 The image shows a graphic design with the word "Yahoo" prominently
displayed in white text. To the right of the text is a stylized
representation of a web browser icon, commonly associated with Yahoo!
services. Below the logo, there are two small icons that look like a
smartphone and a tablet or laptop, suggesting a connection to mobile
devices or computing platforms. The overall design has a modern and sleek
aesthetic, likely intended for branding purposes or as part of an
advertisement related to technology or internet services. The design
appears to be for the "boom" version of Yahoo, which may imply that this
is the "boom" edition of their platform or services.

>>> Send a message (/? for help)
```

3.3. End the conversation

Use the `Ctrl+d` shortcut key or `/bye` to end the conversation!



```
jetson@yahboom:~$ ollama run  llava:7b
>>> What's in this image? /home/jetson/opencv/images/yahboom_logo.png
Added image '/home/jetson/opencv/images/yahboom_logo.png'
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appears to be for the "boom" version of Yahoo, which may imply that this
is the "boom" edition of their platform or services.

>>> /bye
jetson@yahboom:~$
```

4. Memory optimization

Since the local model has very high memory requirements, if you cannot run the model, you can follow the tutorial below to close the graphical interface and run the model in command line mode.

```
For users without display screen, the command line mode requires knowing the IP
address of the motherboard in advance.
```

- Command line mode

```
sudo systemctl set-default multi-user.target
```

After running, restart the system to take effect, and then use SSH remote system to run the model.

- Desktop mode (graphical interface)

```
sudo systemctl set-default graphical.target
```

After running, restart the system to take effect and restore the desktop mode.

References

> **Ollama**

Official website: https://ollama.com/

GitHub: https://github.com/ollama/ollama

> **LLaVA**

GitHub: https://github.com/haotian-liu/LLaVA

Ollama corresponding model: https://ollama.com/library/llava