

# Ollama

## Ollama

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### Demo Environment

**Development board:** Jetson Orin series motherboard

**SSD:** 128G

### Tutorial Scope

Motherboard model	Support
Jetson Orin NX 16GB	√
Jetson Orin NX 8GB	√
Jetson Orin Nano 8GB	√
Jetson Orin Nano 4GB	√

Ollama is an open source tool that aims to simplify the deployment and operation of large language models, allowing users to use high-quality language models in local environments.

## Large Language Models (LLM)

Large Language Models (LLM) are a type of advanced text generation system based on artificial intelligence technology. Its main feature is that it can learn and understand human language through large-scale training data and can generate natural and fluent text.

## Ollama Installation

The tutorial demonstrates the use of scripts to install Ollama on Jetson Orin series motherboards.

### Script Installation

```
sudo apt install curl
curl -fsSL https://ollama.com/install.sh | sh
```

```
Activities Terminator Jul 8 14:58 jetson@ubuntu: ~
jetson@ubuntu: ~ 104x28
jetson@ubuntu:~$ sudo apt install curl
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  fltk1.3-doc fluid fonts-lato freeglut3-dev gazebo11 gazebo11-common
  gazebo11-plugin-base hddtemp ignition-tools libassimp-dev libassimp5
  libavdevice-dev libavfilter-dev libbullet-dev libbullet2.88 libccd-dev
  libccd2 libdart-collision-bullet-dev libdart-collision-ode-dev libdart-dev
  libdart-external-ikfast-dev libdart-external-odelcpsolver-dev
  libdart-utils-dev libdart-utils-urdf-dev libdart6 libdart6-collision-bullet
  libdart6-collision-ode libdart6-external-odelcpsolver libdart6-utils
  libdart6-utils-urdf libfcl-dev libfcl0.5 libfltk-cairo1.3 libfltk-forms1.3
  libfltk-gli1.3 libfltk1.3-dev libgazebo11 libgazebo11-dev libgts-dev
  libignition-cmake2-dev libignition-common3 libignition-common3-av
  libignition-common3-av-dev libignition-common3-core-dev
  libignition-common3-dev libignition-common3-events
  libignition-common3-events-dev libignition-common3-graphics
  libignition-common3-graphics-dev libignition-common3-profiler
  libignition-common3-profiler-dev libignition-fuel-tools4
  libignition-fuel-tools4-dev libignition-math6 libignition-math6-dev
  libignition-msgs5 libignition-msgs5-dev libignition-tools-dev
  libignition-transport8 libignition-transport8-core-dev
  libignition-transport8-dev libignition-transport8-log
  libignition-transport8-log-dev libnorm-dev liboctomap-dev liboctomap1.9
  libode-dev libode8 libogre-1.9-dev libogre-1.9.0v5 liborocos-kdl-dev
  liborocos-kdl1.4 libpgm-dev libpostproc-dev libprotobuf-dev
  libprotobuf-lite17 libprotoc-dev libprotoc17 libpyside2-dev
  libpyside2-nv3-5.14 libpyside2-dev libpyside2-7-dev libpyside2-qt5-6
```

```
Activities Terminator Jul 8 15:07 jetson@ubuntu: ~
jetson@ubuntu: ~ 104x28
(Reading database ... 228659 files and directories currently installed.)
Preparing to unpack .../libcurl4-openssl-dev_7.68.0-1ubuntu2.22_arm64.deb ...
Unpacking libcurl4-openssl-dev:arm64 (7.68.0-1ubuntu2.22) over (7.68.0-1ubuntu2.19) ...
Preparing to unpack .../curl_7.68.0-1ubuntu2.22_arm64.deb ...
Unpacking curl (7.68.0-1ubuntu2.22) over (7.68.0-1ubuntu2.19) ...
Preparing to unpack .../libcurl4_7.68.0-1ubuntu2.22_arm64.deb ...
Unpacking libcurl4:arm64 (7.68.0-1ubuntu2.22) over (7.68.0-1ubuntu2.19) ...
Setting up libcurl4:arm64 (7.68.0-1ubuntu2.22) ...
Setting up curl (7.68.0-1ubuntu2.22) ...
Setting up libcurl4-openssl-dev:arm64 (7.68.0-1ubuntu2.22) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
jetson@ubuntu:~$ curl -fsSL https://ollama.com/install.sh | sh
>>> Downloading ollama...
##### 100.0%#=#=# #
##### 100.0%
>>> Installing ollama to /usr/local/bin...
>>> Creating ollama user...
>>> Adding ollama user to render group...
>>> Adding ollama user to video group...
>>> Adding current user to ollama group...
>>> Creating ollama systemd service...
>>> Enabling and starting ollama service...
Created symlink /etc/systemd/system/default.target.wants/ollama.service → /etc/systemd/system/ollama.service.
>>> Installing NVIDIA repository...
curl: (22) The requested URL returned error: 404
jetson@ubuntu:~$
```

The entire installation process takes a long time, please be patient!

The prompt curl: (22) The requested URL returned error: 404 appears, you can ignore it!

## Ollama usage

Type ollama in the terminal and you will see the prompt:

```
Activities Terminator Jul 8 15:07 jetson@ubuntu: ~
jetson@ubuntu: ~ 104x28
Created symlink /etc/systemd/system/default.target.wants/ollama.service → /etc/systemd/system/ollama.service.
>>> Installing NVIDIA repository...
curl: (22) The requested URL returned error: 404
jetson@ubuntu:~$ ollama
Usage:
  ollama [flags]
  ollama [command]

Available Commands:
  serve      Start ollama
  create     Create a model from a Modelfile
  show       Show information for a model
  run        Run a model
  pull       Pull a model from a registry
  push       Push a model to a registry
  list       List models
  ps         List running models
  cp         Copy a model
  rm         Remove a model
  help       Help about any command

Flags:
  -h, --help      help for ollama
  -v, --version    Show version information

Use "ollama [command] --help" for more information about a command.
jetson@ubuntu:~$
```

Command	Purpose
ollama serve	Start ollama
ollama create	Create a model from a model file
ollama show	Show model information
ollama run	Run a model
ollama pull	Pull a model from a registry
ollama push	Push a model to a registry
ollama list	List models
ollama ps	List running models
ollama cp	Copy a model
ollama rm	Delete a model
ollama help	Get help information about any command

##

- Delete service

```
sudo systemctl stop ollama
sudo systemctl disable ollama
sudo rm /etc/systemd/system/ollama.service
```

- Delete Files

```
sudo rm $(which ollama)
```

- Deleting model and service users and groups

```
sudo rm -r /usr/share/ollama  
sudo userdel ollama  
sudo groupdel ollama
```

## References

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### Ollama

Official website: <https://ollama.com/>

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