

# Phi-3

## Phi-3

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### 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	√	√

Phi-3 is a powerful, cost-effective small language model (SLM) from Microsoft that outperforms models of the same and higher sizes in a variety of language, reasoning, encoding, and math benchmarks.

## 1. Model size

Model	Parameters
Phi-3 (Mini)	3.8B
Phi-3 (Medium)	14B

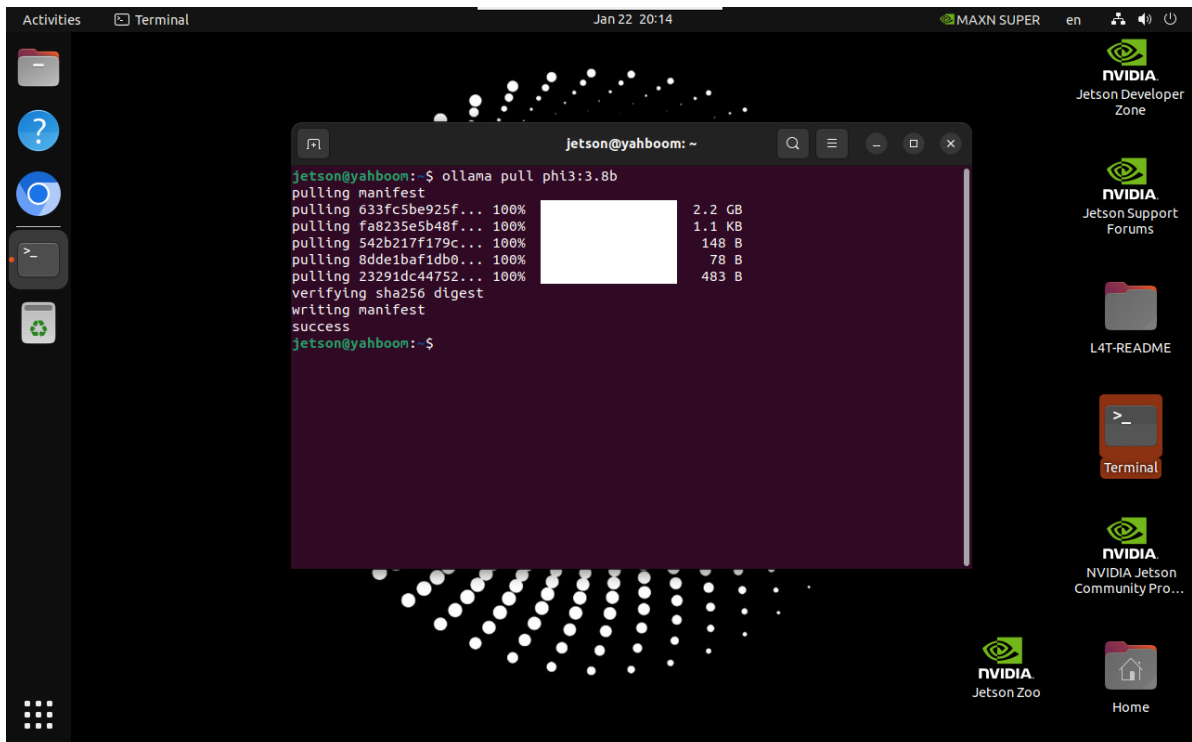
## 2. Performance

Category	Benchmark	Phi-3				Gemma-7b	Mistral-7b	Mixtral-8x7b	Llama-3-8B-In	GPT3.5-Turbo-1106	Claude-3 Sonnet
		Phi-3-Mini-4K-In	Phi-3-Mini-128K-In	Phi-3-Small (Preview)	Phi-3-Medium (Preview)						
Popular Aggregate Benchmarks	AGI Eval (0-shot)	37.5	36.9	45	48.4	42.1	35.1	45.2	42	48.4	48.4
	MMLU (5-shot)	68.8	68.1	75.6	78.2	63.6	61.7	70.5	66.5	71.4	73.9
	BigBench Hard (0-shot)	71.7	71.5	74.9	81.3	59.6	57.3	69.7	51.5	68.3	--
Language Understanding	ANLI (7-shot)	52.8	52.8	55	58.7	48.7	47.1	55.2	57.3	58.1	68.6
	HellaSwag (5-shot)	76.7	74.5	78.7	83	49.8	58.5	70.4	71.1	78.8	79.2
Reasoning	ARC Challenge (10-shot)	84.9	84	90.7	91	78.3	78.6	87.3	82.8	87.4	91.6
	ARC Easy (10-shot)	94.6	95.2	97.1	97.8	91.4	90.6	95.6	93.4	96.3	97.7
	BoolQ (0-shot)	77.6	78.7	82.9	86.6	66	72.2	76.6	80.9	79.1	87.1
	CommonsenseQA (10-shot)	80.2	78	80.3	82.6	76.2	72.6	78.1	79	79.6	82.6
	MedQA (2-shot)	53.8	55.3	58.2	69.4	49.6	50	62.2	60.5	63.4	67.9
	OpenBookQA (10-shot)	83.2	80.6	88.4	87.2	78.6	79.8	85.8	82.6	86	90.8
	PIQA (5-shot)	84.2	83.6	87.8	87.7	78.1	77.7	86	75.7	86.6	87.8
	Social IQA (5-shot)	76.6	76.1	79	80.2	65.5	74.6	75.9	73.9	68.3	80.2
	TruthfulQA (MC2) (10-shot)	65	63.2	68.7	75.7	52.1	53	60.1	63.2	67.7	77.8
	WinoGrande (5-shot)	70.8	72.5	82.5	81.4	55.6	54.2	62	65	68.8	81.4
Factual Knowledge	TriviaQA (5-shot)	64	57.1	59.1	75.6	72.3	75.2	82.2	67.7	85.8	65.7
Math	GSM8K Chain of Thought (0-shot)	82.5	83.6	88.9	90.3	59.8	46.4	64.7	77.4	78.1	79.1
Code generation	HumanEval (0-shot)	59.1	57.9	59.1	55.5	34.1	28	37.8	60.4	62.2	65.9
	MBPP (3-shot)	53.8	62.5	71.4	74.5	51.5	50.8	60.2	67.7	77.8	79.4

### 3. Pull Phi-3

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

```
ollama pull phi3:3.8b
```



### 4. Use Phi-3

## 4.1. Run Phi-3

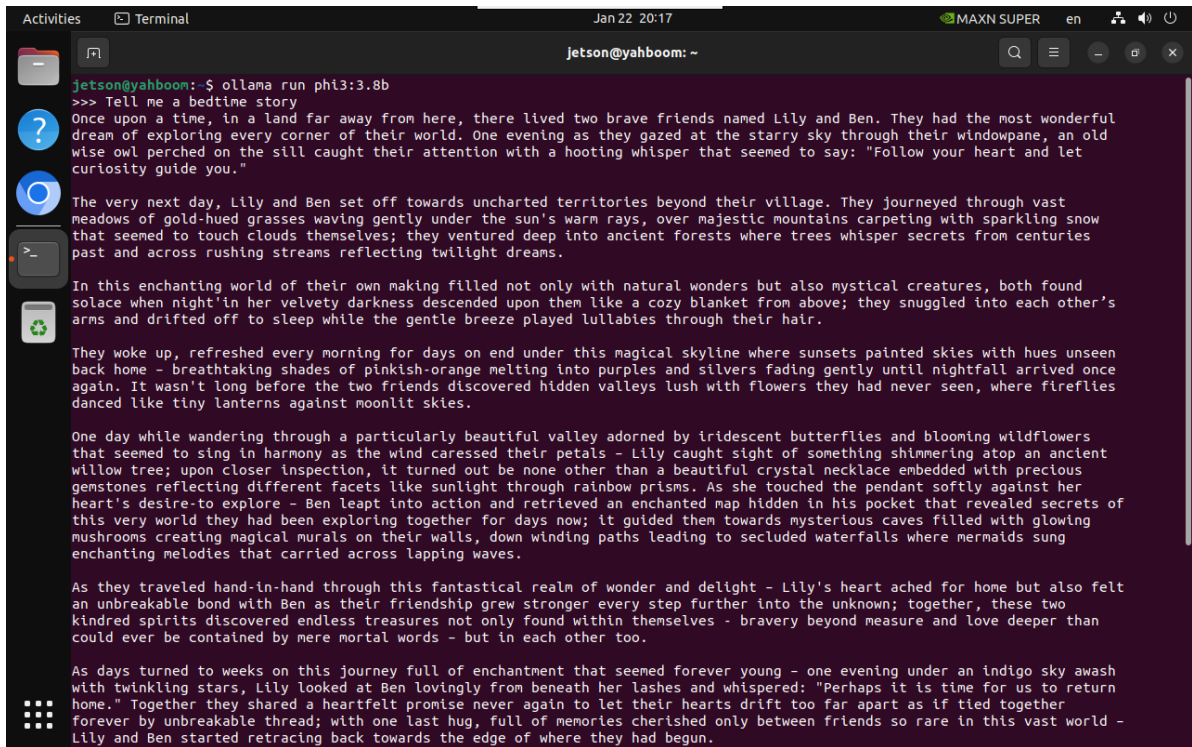
If the system does not have a running model, the system will automatically pull the Phi-3 3.8B model and run it:

```
ollama run phi3:3.8b
```

## 4.2. Have a conversation

```
Tell me a bedtime story
```

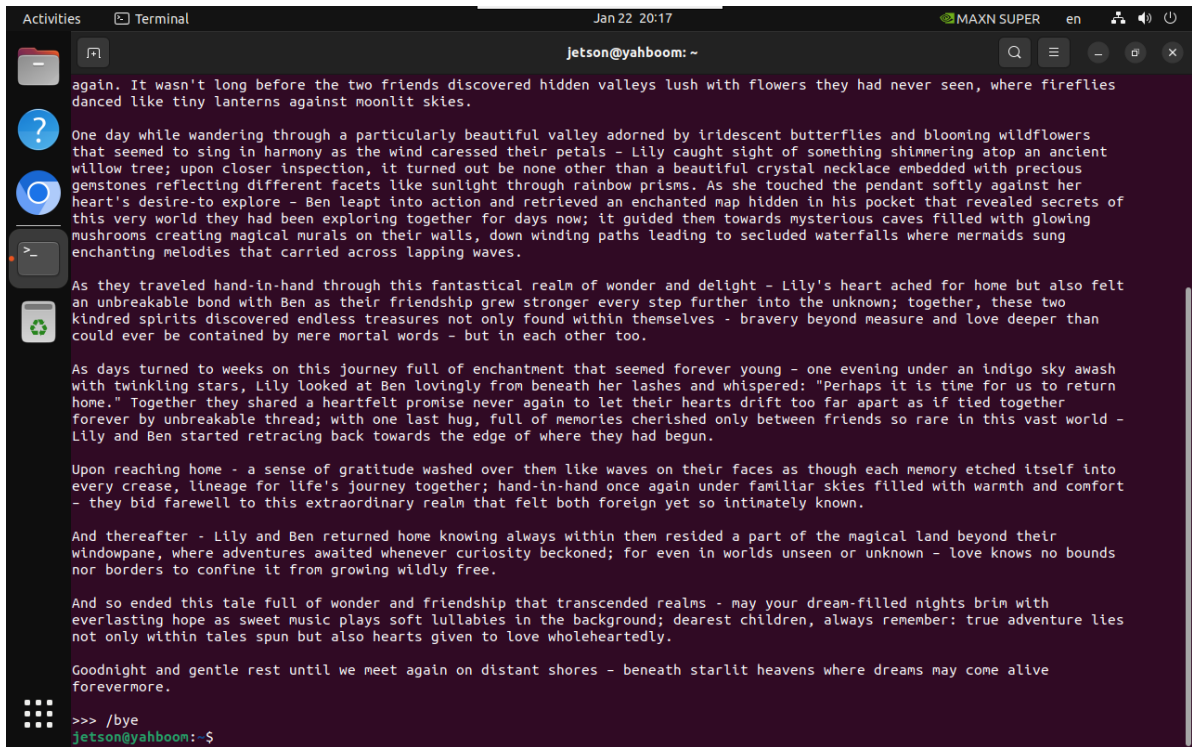
The time to reply to the question depends on the hardware configuration, please wait patiently!



```
Jetson@yahboom: ~  
$ ollama run phi3:3.8b  
>>> Tell me a bedtime story  
Once upon a time, in a land far away from here, there lived two brave friends named Lily and Ben. They had the most wonderful dream of exploring every corner of their world. One evening as they gazed at the starry sky through their windowpane, an old wise owl perched on the sill caught their attention with a hooting whisper that seemed to say: "Follow your heart and let curiosity guide you."  
The very next day, Lily and Ben set off towards uncharted territories beyond their village. They journeyed through vast meadows of gold-hued grasses waving gently under the sun's warm rays, over majestic mountains carpeting with sparkling snow that seemed to touch clouds themselves; they ventured deep into ancient forests where trees whisper secrets from centuries past and across rushing streams reflecting twilight dreams.  
In this enchanting world of their own making filled not only with natural wonders but also mystical creatures, both found solace when night in her velvety darkness descended upon them like a cozy blanket from above; they snuggled into each other's arms and drifted off to sleep while the gentle breeze played lullabies through their hair.  
They woke up, refreshed every morning for days on end under this magical skyline where sunsets painted skies with hues unseen back home - breathtaking shades of pinkish-orange melting into purples and silvers fading gently until nightfall arrived once again. It wasn't long before the two friends discovered hidden valleys lush with flowers they had never seen, where fireflies danced like tiny lanterns against moonlit skies.  
One day while wandering through a particularly beautiful valley adorned by iridescent butterflies and blooming wildflowers that seemed to sing in harmony as the wind caressed their petals - Lily caught sight of something shimmering atop an ancient willow tree; upon closer inspection, it turned out to be none other than a beautiful crystal necklace embedded with precious gemstones reflecting different facets like sunlight through rainbow prisms. As she touched the pendant softly against her heart's desire-to explore - Ben leapt into action and retrieved an enchanted map hidden in his pocket that revealed secrets of this very world they had been exploring together for days now; it guided them towards mysterious caves filled with glowing mushrooms creating magical murals on their walls, down winding paths leading to secluded waterfalls where mermaids sung enchanting melodies that carried across lapping waves.  
As they traveled hand-in-hand through this fantastical realm of wonder and delight - Lily's heart ached for home but also felt an unbreakable bond with Ben as their friendship grew stronger every step further into the unknown; together, these two kindred spirits discovered endless treasures not only found within themselves - bravery beyond measure and love deeper than could ever be contained by mere mortal words - but in each other too.  
As days turned to weeks on this journey full of enchantment that seemed forever young - one evening under an indigo sky awash with twinkling stars, Lily looked at Ben lovingly from beneath her lashes and whispered: "Perhaps it is time for us to return home." Together they shared a heartfelt promise never again to let their hearts drift too far apart as if tied together forever by unbreakable thread; with one last hug, full of memories cherished only between friends so rare in this vast world - Lily and Ben started retracing back towards the edge of where they had begun.
```

## 4.3. End the conversation

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



```
Activities Terminal Jan 22 20:17 MAXN SUPER en
jetson@yahboom: ~
again. It wasn't long before the two friends discovered hidden valleys lush with flowers they had never seen, where fireflies
danced like tiny lanterns against moonlit skies.
One day while wandering through a particularly beautiful valley adorned by iridescent butterflies and blooming wildflowers
that seemed to sing in harmony as the wind caressed their petals - Lily caught sight of something shimmering atop an ancient
willow tree; upon closer inspection, it turned out to be none other than a beautiful crystal necklace embedded with precious
gemstones reflecting different facets like sunlight through rainbow prisms. As she touched the pendant softly against her
heart's desire to explore - Ben leapt into action and retrieved an enchanted map hidden in his pocket that revealed secrets of
this very world they had been exploring together for days now; it guided them towards mysterious caves filled with glowing
mushrooms creating magical murals on their walls, down winding paths leading to secluded waterfalls where mermaids sung
enchanting melodies that carried across lapping waves.
As they traveled hand-in-hand through this fantastical realm of wonder and delight - Lily's heart ached for home but also felt
an unbreakable bond with Ben as their friendship grew stronger every step further into the unknown; together, these two
kindred spirits discovered endless treasures not only found within themselves - bravery beyond measure and love deeper than
could ever be contained by mere mortal words - but in each other too.
As days turned to weeks on this journey full of enchantment that seemed forever young - one evening under an indigo sky awash
with twinkling stars, Lily looked at Ben lovingly from beneath her lashes and whispered: "Perhaps it is time for us to return
home." Together they shared a heartfelt promise never again to let their hearts drift too far apart as if tied together
forever by unbreakable thread; with one last hug, full of memories cherished only between friends so rare in this vast world -
Lily and Ben started retracing back towards the edge of where they had begun.
Upon reaching home - a sense of gratitude washed over them like waves on their faces as though each memory etched itself into
every crease, lineage for life's journey together; hand-in-hand once again under familiar skies filled with warmth and comfort
- they bid farewell to this extraordinary realm that felt both foreign yet so intimately known.
And thereafter - Lily and Ben returned home knowing always within them resided a part of the magical land beyond their
windowpane, where adventures awaited whenever curiosity beckoned; for even in worlds unseen or unknown - love knows no bounds
nor borders to confine it from growing wildly free.
And so ended this tale full of wonder and friendship that transcended realms - may your dream-filled nights brim with
everlasting hope as sweet music plays soft lullabies in the background; dearest children, always remember: true adventure lies
not only within tales spun but also hearts given to love wholeheartedly.
Goodnight and gentle rest until we meet again on distant shores - beneath starlit heavens where dreams may come alive
forevermore.
>>> /bye
jetson@yahboom: $
```

## References

### Ollama

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

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

### Phi-3

Ollama corresponding model: <https://ollama.com/library/phi3>