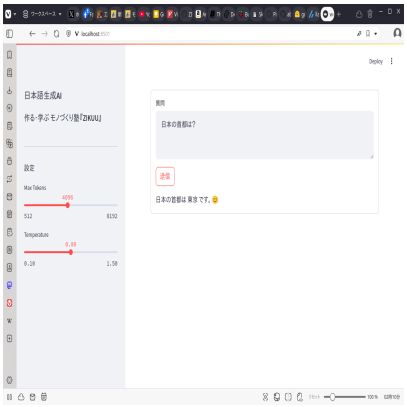

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Description

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é??ç?ºç?°å¢?ã•¯Linux (Linux Mint)ã§ã•?ã•®ã•§ã?•ã••ã??ä¥å¤?ã•®ç?°å¢?ã??ã•?ä½¿ã•?ã•®å ´å•?ã•¯é©å®?èªã•¿æ?¿ã•?ã•¦ã••ã• ã•?ã•?ã??

ä½¿ç?¨ã•?ã??ã?©ã?¤ã??ã?©ã?ªã?¼ã•¯LangChainã¨Llama-cpp-pythonã•§ã•?ã??Web UIã??ä½?ã??ã•®ã•«StreamLitã??ä½¿ã•?ã•¾ã•?ã??

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```
python -m venv llama_cpp
```

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Pythonä»®æ?³ç?°å¢?ã??æ??å?¹å??ã•?ã??

```
source llama_cpp/bin/activate
```

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ã??ã?ã?¸ã?§ã?¯ã??ã??ã?©ã?«ã??ã?¼ã•«requirements.txtã•¨ã•?ã•?ã??ã?-
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```
langchain
langchain-community
llama-cpp-python
streamlit
```

llama-cpp-pythonã•¯ã??ã?¦ã?³ã?ã?¼ã??ã?ã??ã•?å¾?ã•«ã?³ã?³ã??ã?¤ã?«ã•?ã??ã•¾ã•
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```
sudo apt install build-essential
```

pipã?³ã??ã?³ã??ã??ä½¿ã•£ã•¦ã?©ã?¤ã??ã?©ã?ªã?¼ã??ã?¤ã?³ã?¹ã??ã?¼ã?«ã•?ã•¾ã•?ã??

```
pip install -r requirements.txt
```


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```
mkdir models
wget -P ./models https://huggingface.co/bartowski/gemma-2-2b-it-GGUF/resolve/m
```

wgetã•?ã?¤ã?³ã?¹ã??ã?¼ã?«ã•?ã??ã•¦ã•?ã•ªã•?å ´å•?ã•¯æ¬¡ã•®ã?³ã??ã?³ã??ã•
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```
sudo apt update
sudo apt install wget
```

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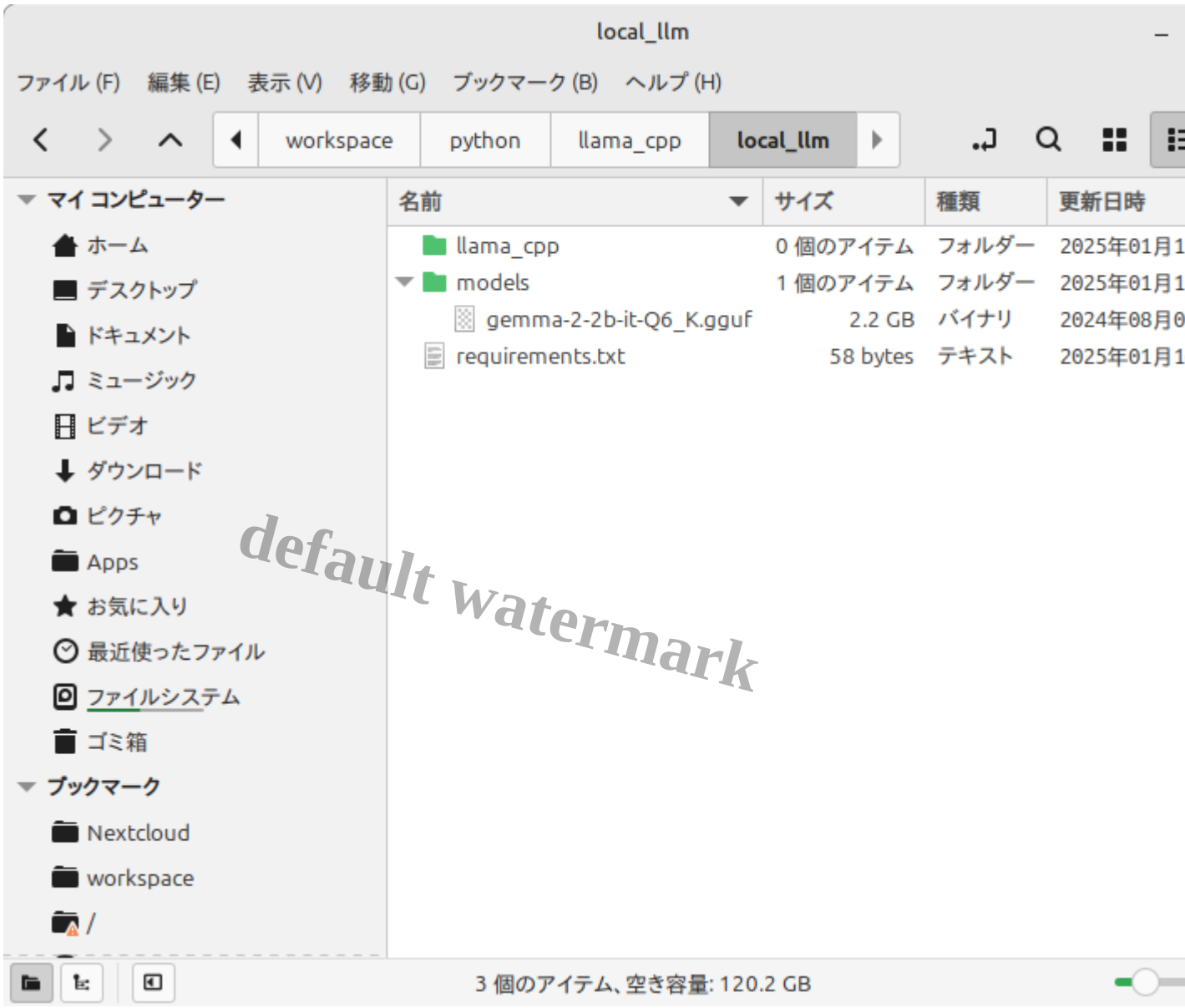

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Pythonã•§è¨?èª?ã?¢ã??ã?«ã??ä½¿ã•£ã•¦æ??ç« ç??æ?•ã??è¡?ã•?ç°¡å•?ã•ªã??ã?ã?°ã?©ã? ã??ä½?ã•£ã•¦ã?•æ£ã•?ã••å?¦ç•?ã•?ã•§ã••ã??ã•?ã•¨ã??ç¢ºèª•ã•?ã•¾ã•?ã??

main.pyã??æ¬¡ã•®å? å®¹ã•§ä½?ã??ã•¾ã•?ã??

```
from llama_cpp import Llama

DEFAULT_SYSTEM_PROMPT = "ã•?ã•ªã•?ã•¯èª å®?ã•§å?ªç§?ã•
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«å??ç?ã•?ã•¦ã••ã• ã•?ã•?ã??"

def make_prompt(message):
    prompt = "<bos><start_of_turn>user {system} {prompt} <end_of_turn> <start_
    return prompt
```

```
llm = Llama(
        model_path="./models/gemma-2-2b-it-Q6_K.gguf",
        n_ctx=4096,
        )
output = llm(make_prompt("Name the planets in the solar system?. "),
             max_tokens=4096,
             echo=True
             )
print(output)
```

main.pyã??å®?è¡?ã•?ã•¾ã•?ã??

```
python main.py
```

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```
llama_model_loader: loaded meta data with 39 key-value pairs and 288 tensors f
llama_model_loader: Dumping metadata keys/values. Note: KV overrides do not ap
llama_model_loader: - kv   0:                       general.architecture str
llama_model_loader: - kv   1:                               general.type str
llama_model_loader: - kv   2:                               general.name str
llama_model_loader: - kv   3:                           general.finetune str
llama_model_loader: - kv   4:                           general.basename str
llama_model_loader: - kv   5:                        general.size_label str
llama_model_loader: - kv   6:                           general.license str
llama_model_loader: - kv   7:                               general.tags arr[s
llama_model_loader: - kv   8:                     gemma2.context_length u32
llama_model_loader: - kv   9:                   gemma2.embedding_length u32
....
....
....
....
llama_perf_context_print:        load time =    1265.40 ms
llama_perf_context_print: prompt eval time =       0.00 ms /    38 tokens (
llama_perf_context_print:        eval time =       0.00 ms /    93 runs   (
llama_perf_context_print:       total time =   10987.63 ms /   131 tokens
{'id': 'cmpl-ea481b2d-bee9-4158-8b9b-77e435daee45', 'object': 'text_completion
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?ã?? Name the planets in the solar system?.  <end_of_turn> <start_of_turn>mode
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?ã??\n\n1. **Mercury:**  é??æ??\n2. **Venus:**  å??æ??\n3. **Earth:**  å?°ç•
?\n4. **Mars:**  ç•
«æ??\n5. **Jupiter:**  æ?¨æ??\n6. **Saturn:**  é??æ??\n7. **Uranus:**  å¤©??æ
```

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Web Ulã??ä½?ã??

Webã??ã?¬ã?¼ã? ã?¯ã?¼ã?¯ã®StreamLitã??ä½¿ã•£ã•¦Webã??ã?©ã?¦ã?¶ã•?ã??ã?¢ã?¯ã?»ã?¹ã•§ã••ã??ã??ã?ã?°ã?©ã? ã??ä½?ã??ã•¾ã•?ã??

web.pyã•¨ã•?ã•?å••å?•ã•®ã??ã?¡ã?¤ã?«ã??ä½?ã??ã?•æ¬¡ã•®å? å®¹ã•«ç·¨é??ã•?ã•¦ä¿•å?ã•?ã•¾ã•?ã??

```
import streamlit as st
from langchain.callbacks.base import BaseCallbackManager
from langchain_community.llms import LlamaCpp
from langchain.callbacks.base import BaseCallbackHandler

DEFAULT_SYSTEM_PROMPT = "ã•?ã•ªã•?ã•¯èª å®?ã•§å?ªç§?ã•
ªæ?¥æ?¬äººã?¢ã?·ã?¹ã?¿ã?³ã??ã•§ã•?ã??è³ªå?•ã•«å¯¾ã•?ã•¦æ?¥æ?¬èª?ã•§ä¸•å¯§ã•
«å??ç?ã•?ã•¦ã••ã• ã•?ã•?ã??"

model_path = "./models/gemma-2-2b-it-Q6_K.gguf"

class StreamHandler(BaseCallbackHandler):
    def __init__(self, container, initial_text="", display_method="markdown"):
        self.container = container
        self.text = initial_text
        self.display_method = display_method

    def on_llm_new_token(self, token: str, **kwargs) -> None:
        self.text += token
        display_function = getattr(self.container, self.display_method, None)
        if display_function is not None:
            display_function(self.text)
        else:
            raise ValueError(f"Invalid display_method: {self.display_method}")

def make_prompt(message):
    prompt = "<start_of_turn>user {system} {prompt} <end_of_turn> <start_of_tu


    return prompt

with st.sidebar:
    st.header('æ?¥æ?¬èª?ç??æ?•AI')
    st.subheader('ä½?ã??ã?»å¦ã•¶ ã?¢ã??ã•¥ã••ã??å¡¾ã??ZIKUUã?•')
    st.divider()

    st.text("è¨å®?")
    max_tokens = st.slider('Max Tokens', value=40960, min_value=8192, max_valu
    temperature = st.slider('Temperature', value=0.8, min_value=0.1, max_value
    n_ctx = st.slider("Number of Ctx", value=8192, min_value=64, max_value=819
    n_batch = st.slider("Number of Batch", value=128, min_value=1, max_value=8

with st.form(key="generation_form"):
    prompt = st.text_area('è³ªå?•')
    do_generate = st.form_submit_button('é?•ä¿¡')
    if do_generate and prompt:
        with st.spinner("ç??æ?•ä¸ ..."):
            chat_box = st.empty()
```

```
            stream_handler = StreamHandler(chat_box, display_method='write')
            chat = LlamaCpp(
                model_path=model_path,
                temperature=temperature,
                max_tokens=max_tokens,
                n_ctx=n_ctx,
                n_batch=n_batch,
                callback_manager=BaseCallbackManager([stream_handler]),
                verbose=False,
            )
            res = chat.invoke(make_prompt(prompt))
```

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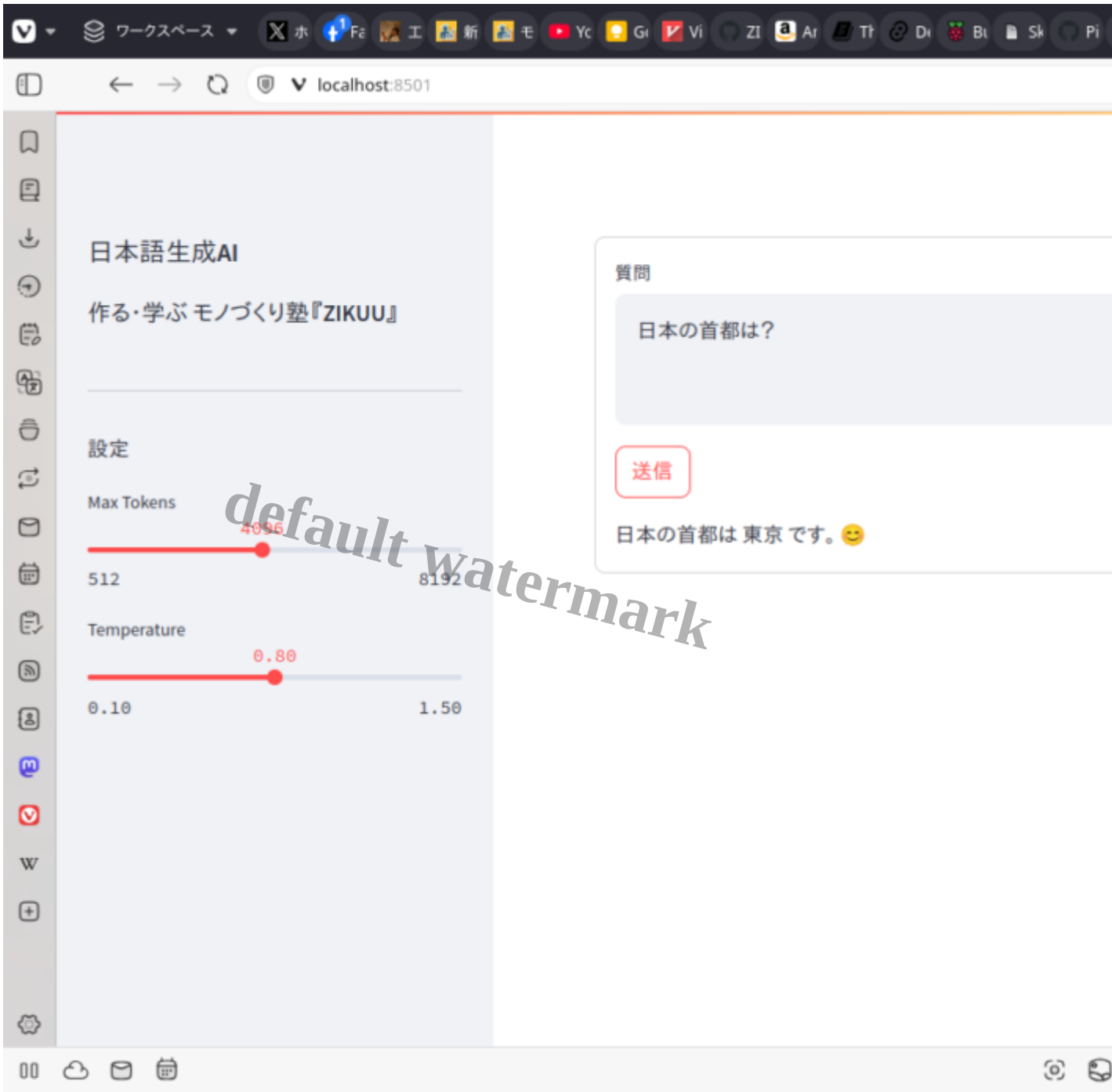
```
streamlit run web.py
```

Webã??ã?©ã?¦ã?¶ã•?ã?? http://localhost:8501ã•«ã?¢ã?¯ã?»ã?¹ã?ã??ã•¨ã?•æ¬¡ã•®ã??ã•?ã•ªç?»é•¢ã•?è¡¨ç¤ºã•?ã??ã?•è³ªå?•æ¬?ã•«ä½?ã•?ã??å ¥å??ã•?ã•¦é?•ä¿¡ã??ã?¿ã?³ã??æ?¼ã•?ã•¨ç??æ?•ã•?ã??ã•?æ??ç« ã•?è¡¨ç¤ºã•?ã??ã??ã•°æ?•å??ã•§ã•?ã??



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Dockerã•§ã??ã?ã?°ã?©ã? ã??å??ã•?ã•?

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```
mkdir docker
cd docker
```

Dockerfileã•¨ã•?ã•?å••å?•ã•®ã??ã?ã?¹ã??ã??ã??ã?¡ã?¤ã?«ã??æ¬¡ã•®å? å®¹ã•§ä½?ã??ã•¾ã•?ã??ï¼?èª¬æ??ã•®ã•?ã•«è¡?ç?ªå•·ã??æ?¯ã£ã¦ã•?ã•¾ã•?ã•?ã?•å®?é??ã•«ä½?æ?•ã•?ã??ã??ã?¡ã?¤ã?«ã•«ã•¯è¡?ç?ªå•·ã•¯ä¸è¦•ã•§ã•?ï¼?

```
 1: FROM ubuntu:22.04
 2:
 3: ENV DEBIAN_FRONTEND=noninteractive
 4: ENV DEBCONF_NOWARNINGS=yes
 5:
 6: RUN apt-get update && apt-get upgrade -y
 7: RUN apt-get dist-upgrade -y && apt-get autoremove -y
 8: RUN apt-get install -y build-essential wget
 9: RUN apt-get install -y python3 python3-venv
10:
11: WORKDIR /app
12:
13: RUN wget -P ./models https://huggingface.co/bartowski/gemma-2-2b-it-GGUF/r
14:
15: COPY ./requirements.txt /app
16: COPY ./web.py /app
17:
18: RUN python3 -m venv /llama_cpp
19: RUN . /llama_cpp/bin/activate && python -m pip install --upgrade pip
20: RUN . /llama_cpp/bin/activate && python -m pip install -r requirements.txt
21:
22: COPY ./docker/entrypoint.sh /
23: RUN chmod 755 /entrypoint.sh
24:
25: EXPOSE 8501
26: ENTRYPOINT ["/entrypoint.sh"]
```


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æ¬¡ã•«docker-compose.ymlã•¨ã•?ã•?å••å?•ã•®Dockerã??ã??ã?ã?¤ã??ã?¡ã?¤ã?«ï¼?Docker composeã??ã?¡ã?¤ã?«ï¼?ã??ä½?ã??ã•¾ã•?ã??

```
version: '3.8'
services:
  app:
    build:
      context: .
      dockerfile: ./docker/Dockerfile
      network: host
    ports:
      - "8501:8501"
```

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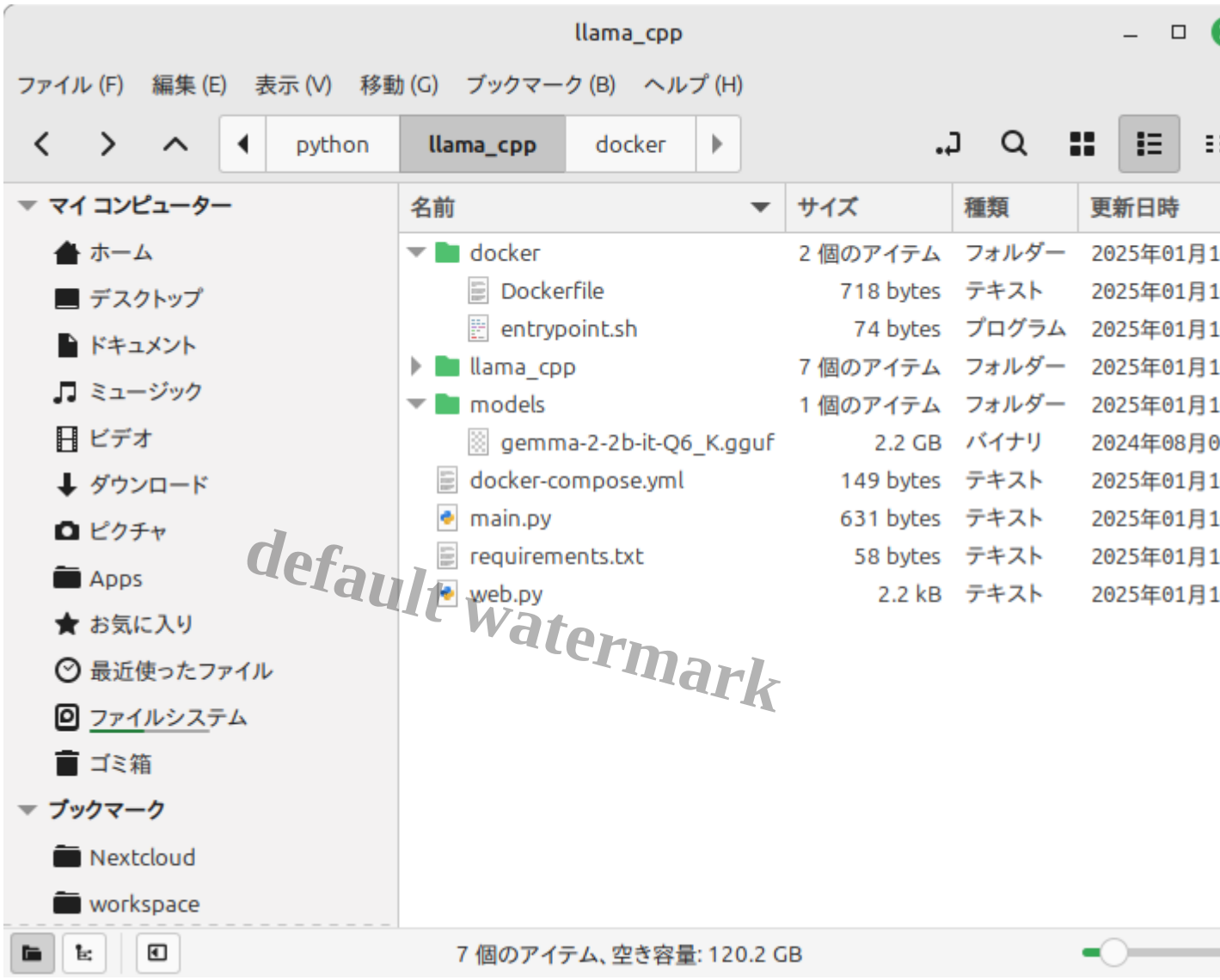

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```
docker compose up
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Category

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Date Created
2025å¹´1æ??17æ?¥
Author
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