Simulate chat with Gemini

Here's a complete, concise, and clearly structured list of all **dependencies and tools** you'll need installed on your NVIDIA DGX server to successfully run **DeepSeek LLM** for DataFrame querying and visualization:

🚀 Complete List of Dependencies

✅ System-Level Dependencies (OS & GPU):

- **Ubuntu Linux (Recommended: 22.04 LTS)**
- **NVIDIA GPU Driver (Recommended: Driver 535 or newer)**
- **CUDA Toolkit (Recommended: CUDA 12.2)**
- **cuDNN Library (Recommended: cuDNN 8.x for CUDA 12.2)**

✅ Python Environment:

- **Python 3.10 (via Miniconda)**

Miniconda: https://docs.conda.io/en/latest/miniconda.html

✅ ML & GPU Frameworks:

- **PyTorch (CUDA-enabled, recommended ≥2.2)**

```bash
pip install torch torchvision torchaudio --index-url
https://download.pytorch.org/whl/cu121
```

✅ Essential Python Libraries:

- **transformers**
- **accelerate**
- **sentencepiece**
- **datasets**
- **huggingface_hub**
- **bitsandbytes**
- **peft (for fine-tuning support, optional but recommended)**
- **einops (useful for advanced tensor operations)**
- **xformers (optional but improves memory efficiency)**

```bash
pip install transformers accelerate sentencepiece datasets huggingface_hub
bitsandbytes peft einops xformers
```

✅ Data Processing & Visualization:

- **pandas**
- **matplotlib**
- **numpy**
- **openpyxl** (to read Excel files)

```bash
pip install pandas matplotlib numpy openpyxl
```

✅ Interactive Development:

- **Jupyter Notebook**

```bash
pip install notebook ipykernel
```

✅ Model (Downloaded Locally):

- **DeepSeek LLM (e.g., deepseek-llm-7b-chat)**
  (Automatically downloaded from Hugging Face)

```python
model_name = "deepseek-ai/deepseek-llm-7b-chat"
```

📌 Final Dependencies List (Summary):

Category	Dependencies
OS & GPU	Ubuntu 22.04, NVIDIA GPU Driver (≥535), CUDA 12.2, cuDNN 8.x
Python	Python 3.10 (Miniconda)
Machine Learning & GPUs	PyTorch (CUDA), transformers, accelerate, bitsandbytes, peft, einops, xformers
Data Processing	pandas, numpy, openpyxl
Visualization	matplotlib
Interactive Environment	Jupyter Notebook, ipykernel
Model	DeepSeek LLM

🛠️ Verifying Your Installation

- Verify GPU support:

```python
import torch
print(torch.cuda.is_available())
```

- Verify CUDA installation:

```bash
nvcc --version
```

- Verify GPU driver installation:

```bash
nvidia-smi
```

✅ You're now ready with all dependencies clearly listed and structured.