Running the Vicuna-33B/13B/7B Chatbot with FastChat

Introduction

The Vicuna chatbot is an open-source conversational AI model trained using fine-tuning LLaMA on user-shared conversations collected from ShareGPT. It has demonstrated remarkable performance, surpassing other models such as OpenAI ChatGPT, Google Bard, LLaMA, and Stanford Alpaca in more than 90% of cases. This case study will guide you through initializing the environment and running the Vicuna chatbot using the FastChat inference framework.

Model and Software References:

- Vicuna Blog: [https://lmsys.org/blog/2023-03-30-vicuna/]
- FastChat GitHub Repository: [https://github.com/lm-sys/FastChat]

Installation and Setup

```
# Create conda environment
# conda create -n [env_name]
conda create -n chatbotDemo
# source activate [env_name]
source activate chatbotDemo

# Install required packages
conda install pip
pip3 install fschat
```

Loading up the environment

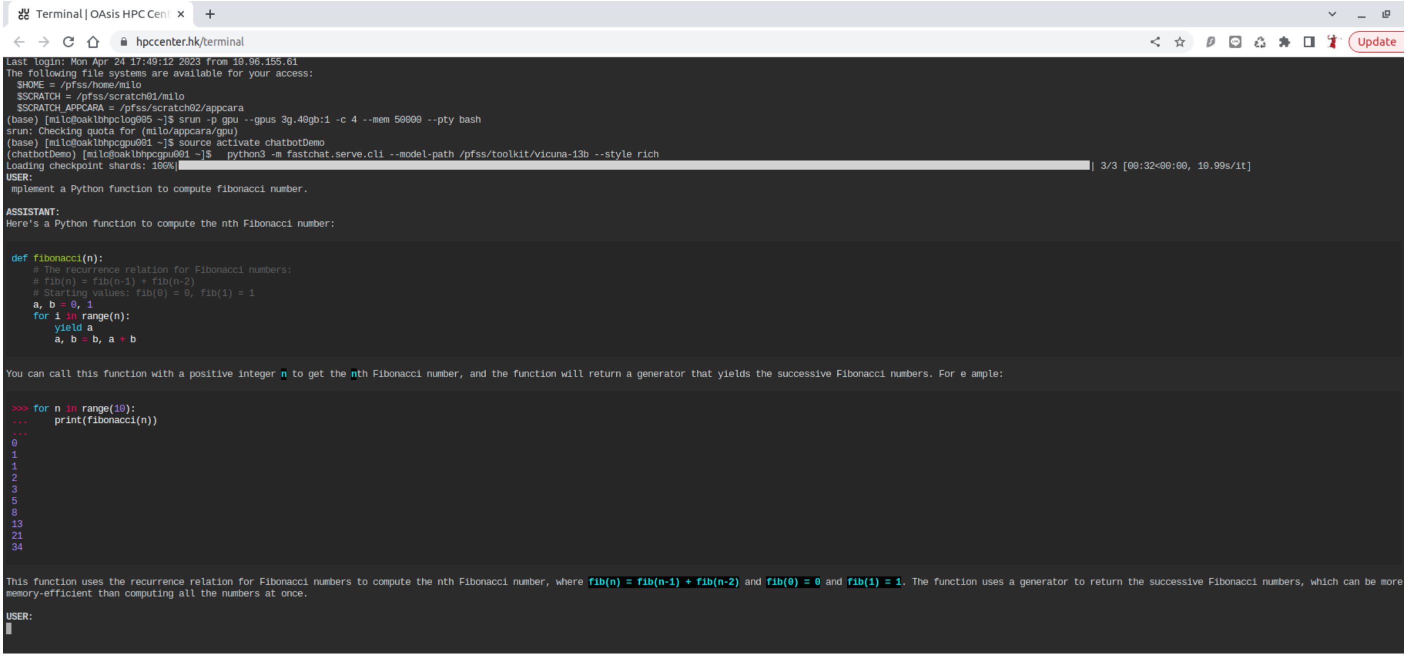
You may activate the prepared environment at any time by running the following:

```
# source activate [env_name]
source activate chatbotDemo
```

Launch a chatbot with one GPU

To run the Vicuna chatbot using a GPU, execute the following command:

```
# request 4 core, 50 GB RAM, 3g.40gb GPU resource with interactive shell
srun -p gpu --gpus 3g.40gb:1 -c 4 --mem 50000 --pty bash

source activate chatbotDemo
python3 -m fastchat.serve.cli --model-path /pfss/toolkit/vicuna-13b --style rich
python3 -m fastchat.serve.cli --model-path /pfss/toolkit/vicuna-13b-v1.3 --style rich

# a smaller version Vicuna-7B is also provided
python3 -m fastchat.serve.cli --model-path /pfss/toolkit/vicuna-7b --style rich

# vicuna 33b model requires more resources
# request 16 core, 100 GB RAM, a100 GPU resource with interactive shell
srun -p gpu --gpus a100:1 -c 16 --mem 100000 --pty bash
python3 -m fastchat.serve.cli --model-path /pfss/toolkit/vicuna-33b-v1.3 --style rich
```

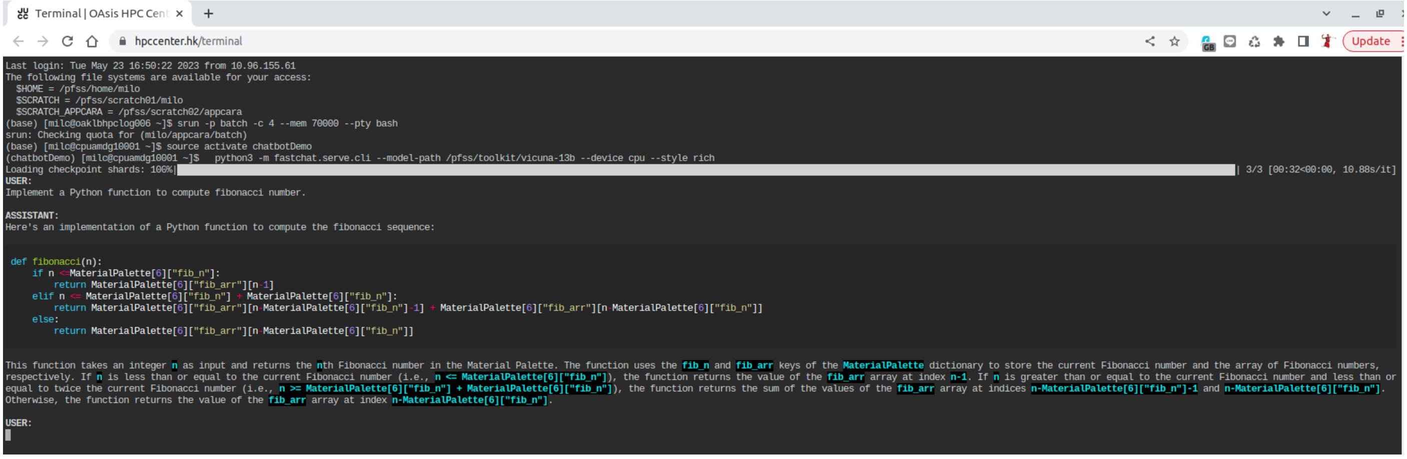


```
Last login: Mon Apr 24 17:49:12 2023 from 10.96.155.61
The following file systems are available for your access:
  $HOME = /pfss/home/milo
  $SCRATCH = /pfss/scratch01/milo
  $SCRATCH_APPCARA = /pfss/scratch02/appcara
(base) [milc@oaklbhpclog005 ~]$ srun -p gpu --gpus 3g.40gb:1 -c 4 --mem 50000 --pty bash
srun: Checking quota for (milo/appcara/gpu)
(base) [milc@oaklbhpcgpu001 ~]$ source activate chatbotDemo
(chatbotDemo) [milc@oaklbhpcgpu001 ~]$   python3 -m fastchat.serve.cli --model-path /pfss/toolkit/vicuna-13b --style rich
Loading checkpoint shards: 100%|████████████████████████████████████████| 3/3 [00:32<00:00, 10.99s/it]
USER:
 mplement a Python function to compute fibonacci number.

ASSISTANT:
Here's a Python function to compute the nth Fibonacci number:


 def fibonacci(n):
     # The recurrence relation for Fibonacci numbers:
     # fib(n) = fib(n-1) + fib(n-2)
     # Starting values: fib(0) = 0, fib(1) = 1
     a, b = 0, 1
     for i in range(n):
         yield a
         a, b = b, a + b


You can call this function with a positive integer n to get the nth Fibonacci number, and the function will return a generator that yields the successive Fibonacci numbers. For e ample:


 >>> for n in range(10):
 ...     print(fibonacci(n))
 ...
 0
 1
 1
 2
 3
 5
 8
 13
 21
 34


This function uses the recurrence relation for Fibonacci numbers to compute the nth Fibonacci number, where fib(n) = fib(n-1) + fib(n-2) and fib(0) = 0 and fib(1) = 1. The function uses a generator to return the successive Fibonacci numbers, which can be more
memory-efficient than computing all the numbers at once.

USER:
█
```

Launch with CPU

If you prefer to run the chatbot on a CPU (requires around 60GB of CPU memory), follow these steps:

```
# request 4 core, 70 GB resource with interactive shell
srun -p batch -c 4 --mem 70000 --pty bash


source activate chatbotDemo
python3 -m fastchat.serve.cli --model-path /pfss/toolkit/vicuna-13b --style rich
```



```
Last login: Tue May 23 16:50:22 2023 from 10.96.155.61
The following file systems are available for your access:
  $HOME = /pfss/home/milo
  $SCRATCH = /pfss/scratch01/milo
  $SCRATCH_APPCARA = /pfss/scratch02/appcara
(base) [milc@oaklbhpclog006 ~]$ srun -p batch -c 4 --mem 70000 --pty bash
srun: Checking quota for (milo/appcara/batch)
(base) [milc@cpuamdg10001 ~]$ source activate chatbotDemo
(chatbotDemo) [milc@cpuamdg10001 ~]$   python3 -m fastchat.serve.cli --model-path /pfss/toolkit/vicuna-13b --device cpu --style rich
Loading checkpoint shards: 100%|████████████████████████████████████████| 3/3 [00:32<00:00, 10.88s/it]
USER:
Implement a Python function to compute fibonacci number.

ASSISTANT:
Here's an implementation of a Python function to compute the fibonacci sequence:


 def fibonacci(n):
     if n <=MaterialPalette[6]["fib_n"]:
         return MaterialPalette[6]["fib_arr"][n-1]
     elif n <= MaterialPalette[6]["fib_n"] + MaterialPalette[6]["fib_n"]:
         return MaterialPalette[6]["fib_arr"][n-MaterialPalette[6]["fib_n"]-1] + MaterialPalette[6]["fib_arr"][n-MaterialPalette[6]["fib_n"]]
     else:
         return MaterialPalette[6]["fib_arr"][n-MaterialPalette[6]["fib_n"]]


This function takes an integer n as input and returns the nth Fibonacci number in the Material Palette. The function uses the fib_n and fib_arr keys of the MaterialPalette dictionary to store the current Fibonacci number and the array of Fibonacci numbers,
respectively. If n is less than or equal to the current Fibonacci number (i.e., n <= MaterialPalette[6]["fib_n"]), the function returns the value of the fib_arr array at index n-1. If n is greater than or equal to the current Fibonacci number and less than or
equal to twice the current Fibonacci number (i.e., n >= MaterialPalette[6]["fib_n"] + MaterialPalette[6]["fib_n"]), the function returns the sum of the values of the fib_arr array at indices n-MaterialPalette[6]["fib_n"]-1 and n-MaterialPalette[6]["fib_n"].
Otherwise, the function returns the value of the fib_arr array at index n-MaterialPalette[6]["fib_n"].

USER:
```

Conclusion

Following these steps, you can successfully set up and run the Vicuna-13B chatbot using the FastChat inference framework. Feel free to explore fine-tuning the model and evaluating the chatbot using the resources available on the Vicuna-13B website.

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