# $\Sigma\Sigma_{Job}$: $\text{Sums}_{\text{Job}}$ (**S**imple **U**tility for **M**ultiple-**S**ervers **Job Sub**mission)

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Dec 9, 2021

# Assume you have GPU servers: server1, server2, ...

When you need to run a code from your computer, you will

1. Select one server and log in

   ```
   $ ssh LAN (May first log in a local area network)
   $ ssh server1
   ```

2. Check GPU status. If no free GPU, go to step 1

   ```
   $ nvidia-smi or $ gpustat
   ```

3. Copy the code from your computer to the server

   ```
   $ scp -r codes server1:~/project/codes
   ```

4. Run the code in the server

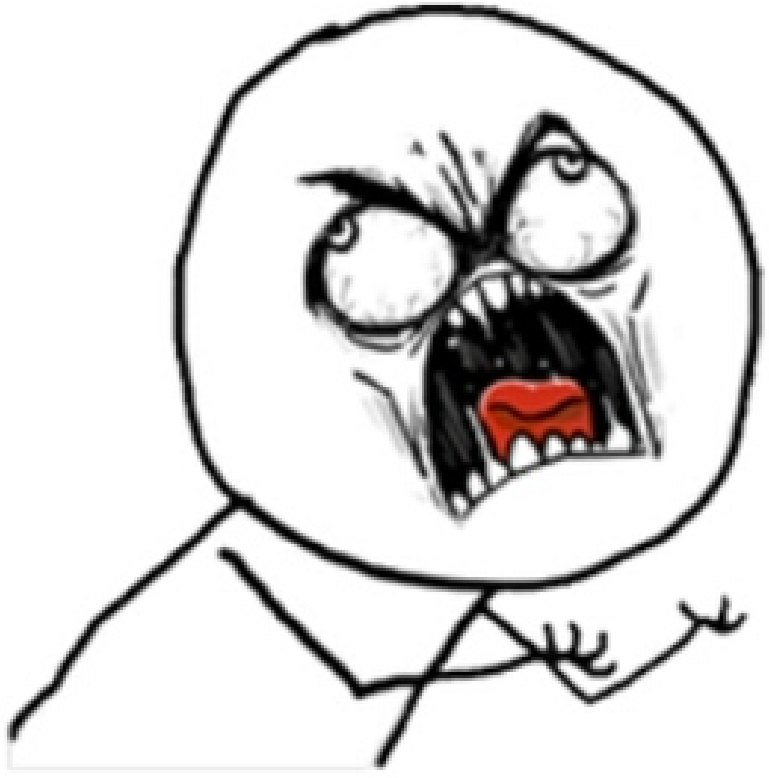
   ```
   $ cd ~/project/codes
   $ CUDA_VISIBLE_DEVICES=0 python main.py
   ```

5. Transfer back the results

   ```
   $ scp server1:~/project/codes/ml.dat .
   ```

# One week later. . .

Cause I am lazy, I am crazy.



Sums$_{\text{Job}}$ (**S**imple **U**tility for **M**ultiple-**S**ervers **Job Sub**mission)

- A simple Linux ***command-line utility*** which ***submits a job*** to one of the ***multiple servers*** each with limited resources.

Features

- Simple to use: commands `gpuresource` and `submit` are all your need
- Automatically choose available GPUs among all the servers
- interactively: just as the job is running in your local machine
  - Display the output of the job in real time
  - Kill the job by Ctrl-C
  - Save the output in a log file
  - Transfer back the files you specified

# $ gpuresource

Show the status of GPUs on all servers.

```
ll61@apma-gpu-01:~$ gpuresource
chitu  Thu Mar 28 11:04:29 2019
[0] GeForce GTX TITAN X | 83'C,  76 % |  3416 / 12212 MB | twang97:python/7659(3395M) gdm:Xorg/4843(5M)
[1] GeForce GTX TITAN X | 85'C,  87 % | 11639 / 12212 MB | twang97:python/20824(11626M)
[2] GeForce GTX TITAN X | 91'C, 100 % |  8407 / 12212 MB | dz8:python/25485(8394M)
[3] GeForce GTX TITAN X | 44'C,   0 % |     1 / 12212 MB |

wuzhui  Thu Mar 28 11:04:29 2019
[0] GeForce GTX TITAN X | 83'C,  98 % |  8795 / 12205 MB | qzheng8:python/24893(258M) ydeng1:vmd_LINUXAMD64/11873(108M)
[1] GeForce GTX TITAN X | 82'C,  61 % |  8516 / 12207 MB | ydeng1:vmd_LINUXAMD64/11873(108M) dz8:python/11973(8393M)
[2] GeForce GTX TITAN X | 81'C,  93 % |  4418 / 12207 MB | ydeng1:vmd_LINUXAMD64/11873(108M) dz8:python/21644(4295M)
[3] GeForce GTX TITAN X | 78'C,  55 % | 11640 / 12207 MB | ydeng1:vmd_LINUXAMD64/11873(108M) zmao2:python/32568(11516M)

jueying.dam.brown.edu  Thu Mar 28 11:04:32 2019
[0] GeForce GTX TITAN | 40'C,   0 % |     0 /  6083 MB |
[1] GeForce GTX TITAN | 41'C,   0 % |     0 /  6083 MB |
[2] GeForce GTX TITAN | 41'C,   0 % |     0 /  6083 MB |
[3] GeForce GTX TITAN | 39'C,   0 % |     0 /  6083 MB |

Available GPU: chitu [3]
```

Figure 1: Demo.

# `$ submit jobfile jobname`

Automatically do the following:

1. Find a server with free GPU
2. Copy the code to the server
3. Run the job on it
4. When the code finishes, transfer back the results

- `jobfile` : File to be run
- `jobname` : Job name, and also the folder name of the job. If not provided, a random number will be used.

Options:

- `-h`, `--help` : Show this help message and exit
- `-s SERVER`, `--server SERVER` : Server host name
- `--gpuid GPUID` : GPU ID to be used; -1 to use CPU only