**GPU Server User Access, Virtual Environment Creation and Job Submission**

**Users are added as the system users with Sudo privileges to create virtual environments and install packages required for their technical needs.**

**Note:**

**Please don’t install any packages on system using apt-get or .deb file or pip packages on the system without consulting the server administrators.**

**User Access:**

Juputer Hub is used to create multi-user environment to access GPU Server. Jupyter hub will spawn Jupyter lab/notebook server along with terminal access to server.

User can log into server via environment using any browser:

URL: <http://172.16.18.235>

Username: <**username**> / raghu

Password: <**username**>@123 / raghu@321

**User Environment Creation**:

User need to create their own virtual environments using venv to install there dependencies and packages to run your workloads.

Following are the steps to create virtual environment and install required packages and **also to add the environment as a jupyter kernel to work ahead**.

**Here is an example steps for username raghu, please replace the username with yours.**

* **Create an environment:**

sudo python3.10 -m venv /home/raghu/raghuenv

* **Source or activate the environment:**

**UT1: source /home/raghu/raghuenv/bin/activate**

**Go to project path: Speeh\_Enhancement\_BDA2024**

* **Install packages and dependencies:**

sudo /home/raghu/raghuenv/bin/pip3.10 install tensorflow-gpu==2.10.0

sudo /home/raghu/raghuenv/bin/pip3.10 show tensorflow-gpu

sudo /home/raghu/raghuenv/bin/pip3.10 install keras

sudo /home/raghu/riddhienv/bin/pip3.10 install tensorflow==2.10.1

sudo /home/raghu/riddhienv/bin/pip3.10 install opencv-python==4.6.0.66

sudo /home/raghu/riddhienv/bin/pip3.10 install matplotlib==3.6.2

sudo /home/raghu/riddhienv/bin/pip3.10 install gdown==4.6.0

sudo /home/raghu/riddhienv/bin/pip3.10 install numpy==1.24.1

* **List the packages in the environment:**

sudo /home/raghu/raghuenv/bin/pip3.10 list

* **Add the virtual environment as a kernel to notebook:**

sudo /home/raghu/raghuenv/bin/pip3.10 install ipykernel

sudo /home/raghu/raghuenv/bin/python3.10 -m ipykernel install --name=raghuenv --prefix=/home/raghu/.local

sudo /home/raghu/riddhienv/bin/python3.10 -m ipykernel install --name=riddhienv --prefix=/home/raghu/.local

**In Speeh\_Enhancement\_BDA2024:**

**sudo /home/raghu/raghuenv/bin/python3.10 main.py --mode='data\_creation'**

**sudo /home/raghu/raghuenv/bin/python3.10 main.py --mode='training'**

**sudo /home/raghu/raghuenv/bin/python3.10 modeltojson.py**

**sudo /home/raghu/raghuenv/bin/python3.10 main.py --mode='prediction'**

**Job Submission:**

SLURM is a powerful job scheduling system for managing and allocating resources on a cluster. To schedule and manage the GPU resources, User can submit his training job or any workload on GPU using job file.

**User need to create job file like job\_gpu.sh**

**#!/bin/bash**

**#SBATCH --job-name=train\_model**

**#SBATCH --output=train\_model\_output.txt**

**#SBATCH --error=train\_model\_error.txt**

**#SBATCH --nodes=1**

**#SBATCH --mem=10G # Memory matches the MIG profile**

**#SBATCH --time=1:00:00**

**#SBATCH --partition=gpu**

**# Deactivate your Python environment (if needed)**

**source /home/raghu/raghuenv/bin/activate**

**# source deactivate**

**#change and move to specific directory to run jobs**

**cd /home/raghu/mycode/**

**# Run your Python script**

**python3 train\_model.py**

**Please make sure user create their code to train model in a python file, like train\_model.py and also specify the files to output results and errors. User need to specify the amount of GPU memory required for your job (Please provide appropriate values to memory, don’t over estimate and consume extra memory)**

**>>> sinfo**

**Submit Jobs:**

**Open terminal >>>> sbatch job\_gpu.sh**

**Monitor your Jobs:**

**Open terminal >>>> squeue**

**Monitor GPU and its related processes:**

1. **Use sudo nvidia-smi**

**Utility will list current process id and amount of GPU memory consumed by the process.**

1. **nvtop**

**Utility will provide detailed information regarding user and processes using GPU**

1. **Glances:** [**http://172.16.18.235:61208**](http://172.16.18.235:61208)

**Will provide more GPU related data**

1. **Netdata:** [**http://172.16.18.235:19999**](http://172.16.18.235:19999)