

Important links

- WIFI connection info:
 - SSID: TIFR-Conf
 - User id: HSFINDIA
 - Password: HSFINDIA2023
 - For ubuntu users, change the TLS to PEAP (before entering credentials)
- Agenda page: <https://indico.cern.ch/event/1254939/>
- Lets meet eachother: Add a slide about yourself to <https://shorturl.at/fVZ46>
- Join the Slack group for our meeting <https://shorturl.at/hnS79>

Introductions



TIFR: Kajari Mazumdar, Brij Kishor Jashal

Princeton University: Peter Elmer, David Lange, Jim Pivarski

University of Massachusetts, Amherst: Jay Sandesara, Rafael Coelho Lopes de Sa (remote), Verena Martinez Outschoorn (remote)

Who is the HSF?



The HEP Software Foundation facilitates cooperation and **common efforts** in High Energy Physics software and computing internationally.

- The HSF (<http://hepsoftwarefoundation.org>) was created in early 2015 as a means for organizing our community to address the software challenges of future projects such as the HL-LHC. The HSF has the following objectives:
 - Catalyze new common projects
 - Promote commonality and collaboration in new developments to make the most of limited resources
 - Provide a framework for attracting effort and support to S&C projects
 - Provide a structure to set priorities and goals for work in common projects

Vast software ecosystems are necessary to do our science

- Facility driven scientific collaborations require collaborative efforts for everything from building the detector, to its operations and to its data processing and analysis.
- We want to enable you to get involved with the software needed for our science



Margaret Hamilton stands next to a stack of program listings from the Apollo Guidance Computer

Lets get set up for the week

- Our lessons are all based in github and are run in a jupyter notebook.
- To give everyone the same environment, we packaged all the needed software into a Docker container.
- We will use one of the TIFR GPU nodes this week.
- Everyone should have received information about their login
- Now we will try to get everyone set up in our environment

Lets get set up for the week

#replace MY_PORT and MY_USERNAME with information from your email

```
ssh -L localhost:$MY_PORT:localhost:$MY_PORT $MY_USERNAME@gpu01.indiacms.res.in
```

you should be logged into gpu01 now.

In the next three commands, replace the values with your username, port and GPU name!

```
export MY_USERNAME=user1
```

```
export MY_PORT=9001
```

```
export MY_GPU=GPU-16d321bb-408b-f8d6-3efd-30cf8728fab9
```

```
git clone https://github.com/hsf-india-may2023/scientific-python.git
```

```
cd scientific-python
```

```
docker run -i -t --gpus device=$MY_GPU -e MY_PORT=$MY_PORT -p $MY_PORT:$MY_PORT -v  
$PWD:/notebook docker-2023hsfindia /bin/bash
```

in the docker container

```
cd /notebook
```

```
jupyter lab --no-browser --port=$MY_PORT --ip=0.0.0.0 --allow-root
```

Copy and paste the url starting with 127.0.0.1 and open it in your laptop browser


```
[(base) [dlange@gpu01 ~]$ export MY_GPU=GPU-16d321bb-408b-f8d6-3efd-30cf8728fab9
(base) [dlange@gpu01 ~]$ export MY_USERNAME=dlange
[(base) [dlange@gpu01 ~]$ export MY_PORT=9000
(base) [dlange@gpu01 ~]$ cd test2
[(base) [dlange@gpu01 test2]$ docker run -i -t --gpus device=$MY_GPU -e MY_PORT=$MY_PORT -p $MY_PORT:$MY_PORT -v $PWD:/notebook docker-2023hsfindia /
bin/bash
```

```
=====
== CUDA ==
=====
```

CUDA Version 11.3.1

Container image Copyright (c) 2016–2022, NVIDIA CORPORATION & AFFILIATES. All rights reserved.

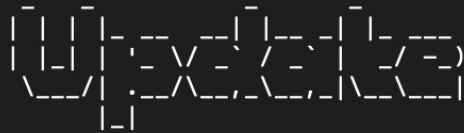
This container image and its contents are governed by the NVIDIA Deep Learning Container License.
By pulling and using the container, you accept the terms and conditions of this license:
<https://developer.nvidia.com/ngc/nvidia-deep-learning-container-license>

A copy of this license is made available in this container at /NGC-DL-CONTAINER-LICENSE for your convenience.

```
(2023-05-01-hsf-india-tutorial) root@e19b3de49f3b:/# cd /notebook
(2023-05-01-hsf-india-tutorial) root@e19b3de49f3b:/notebook# jupyter lab --no-browser --port=$MY_PORT --ip=0.0.0.0 --allow-root
```



```
[I 2023-05-01 10:55:40.773 ServerApp] nbclassic | extension was successfully linked.
[I 2023-05-01 10:55:40.776 ServerApp] Writing Jupyter server cookie secret to /root/.local/share/jupyter/runtime/jupyter_cookie_secret
[I 2023-05-01 10:55:40.781 ServerApp] notebook_shim | extension was successfully linked.
[I 2023-05-01 10:55:40.865 ServerApp] notebook_shim | extension was successfully loaded.
[I 2023-05-01 10:55:40.866 ServerApp] Loading IPython parallel extension
[I 2023-05-01 10:55:40.867 ServerApp] ipyparallel | extension was successfully loaded.
[I 2023-05-01 10:55:40.867 FileIdExtension] Configured File ID manager: ArbitraryFileIdManager
[I 2023-05-01 10:55:40.867 FileIdExtension] ArbitraryFileIdManager : Configured root dir: /notebook
[I 2023-05-01 10:55:40.867 FileIdExtension] ArbitraryFileIdManager : Configured database path: /root/.local/share/jupyter/file_identities
[I 2023-05-01 10:55:40.868 FileIdExtension] ArbitraryFileIdManager : Successfully connected to database file.
[I 2023-05-01 10:55:40.868 FileIdExtension] ArbitraryFileIdManager : Creating File ID tables and indices with journal_mode = WAL
[I 2023-05-01 10:55:40.873 FileIdExtension] Attached event listeners.
[I 2023-05-01 10:55:40.873 ServerApp] jupyter_server_fileid | extension was successfully loaded.
[I 2023-05-01 10:55:40.876 ServerApp] jupyter_server_terminals | extension was successfully loaded.
[I 2023-05-01 10:55:40.878 ServerApp] jupyter_server_ydoc | extension was successfully loaded.
[I 2023-05-01 10:55:40.879 LabApp] JupyterLab extension loaded from /opt/conda/envs/2023-05-01-hsf-india-tutorial/lib/python3.10/site-packages/jupyterlab
erlab
[I 2023-05-01 10:55:40.880 LabApp] JupyterLab application directory is /opt/conda/envs/2023-05-01-hsf-india-tutorial/share/jupyter/lab
[I 2023-05-01 10:55:40.888 ServerApp] jupyterlab | extension was successfully loaded.
```



Read the migration plan to Notebook 7 to learn about the new features and the actions to take if you are using extensions.

https://jupyter-notebook.readthedocs.io/en/latest/migrate_to_notebook7.html

Please note that updating to Notebook 7 might break some of your extensions.

```
[I 2023-05-01 10:55:40.897 ServerApp] nbclassic | extension was successfully loaded.
[I 2023-05-01 10:55:40.898 ServerApp] Serving notebooks from local directory: /notebook
[I 2023-05-01 10:55:40.898 ServerApp] Jupyter Server 2.5.0 is running at:
[I 2023-05-01 10:55:40.898 ServerApp] http://e19b3de49f3b:9000/lab?token=13ed0a865a8b26d2be8d5320746a84709e8e1ad14985785a
[I 2023-05-01 10:55:40.899 ServerApp] http://127.0.0.1:9000/lab?token=13ed0a865a8b26d2be8d5320746a84709e8e1ad14985785a
[I 2023-05-01 10:55:40.899 ServerApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation)
[C 2023-05-01 10:55:40.907 ServerApp]
```

To access the server, open this file in a browser:

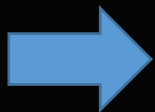
file:///root/.local/share/jupyter/runtime/jpserver-519-open.html

Or copy and paste one of these URLs:

<http://e19b3de49f3b:9000/lab?token=13ed0a865a8b26d2be8d5320746a84709e8e1ad14985785a>

<http://127.0.0.1:9000/lab?token=13ed0a865a8b26d2be8d5320746a84709e8e1ad14985785a>

```
[I 2023-05-01 10:55:51.505 LabApp] Generating new user for token-authenticated requests: 51460ee7422464670460e4a509b28d4b
```



127.0.0.1:9000/lab

FileEditViewRunKernelTabsSettingsHelp

Filter files by name

/

Name

Last Modified

scientific-...

in 4 minutes

Launcher

Notebook

Python 3
(ipykernel)

ROOT C++

Python 3
(ipykernel)

ROOT C++

Console

Python 3
(ipykernel)

ROOT C++

Would you like to receive official Jupyter news?
Please read the privacy policy.

Open privacy policy

Yes

No

Simple

0

\$

0

Launcher

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