### I. Connect to BlueHive via Terminal

To use **Terminal** on Windows, you will need to use PuTTY, on MacOS it is preinstalled (type 'terminal' in Launchpad -> Search). See details on <u>https://info.circ.rochester.edu</u>



To connect, type:

ssh YourNetID@bluehive.circ.rochester.edu

enter password (it won't be shown) and accept Duo verification.

Useful Terminal commands: Is – list of files in the current directory (Is -al includes hidden files) pwd – path to the current directory cd – change directory Ctrl+C – Interrupt a command exit – close session

You have two sections in Bluehive:

/home/YourNetID 20 G

/sratch/YourNetID 200 G (to get there, you can type: cd /sratch/YourNetID)

The first one will be enough for the Conda environment, but the files for your HW5 is better to save on the second section.

After connecting BlueHive II. Set your Conda environment

Some useful commands: List of environments: conda env list Create a new environment: conda create –name <EnvName> Activate environment: source activate <EnvName> Deactivate environment: source deactivate Delete environment: conda env remove --name <EnvName>

1. Open conda, type:

module load miniconda3/4.9.2

2. Create new environment with name pyt (you can use other one):

conda create -n pyt python=3.9 (It will ask to update conda, ignore it. Wait for it ask you to proceed and answer 'y')

2a. You can see the list of environments to check that your environment was created:

conda env list

3. Activate your environment (you will need to do it every time you launch Terminal and want to use Python with your packages):

source /software/miniconda3/4.9.2/bin/activate pyt

4. Install the packages that you wish to use (line by lne):

conda install pandas conda install scipy conda install scikit-learn conda install matplotlib conda install tqdm conda install pytorch torchvision torchaudio cudatoolkit=11.1 -c pytorch -c nvidia

You can also follow these instructions to save the packages in the large folder:

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Welcome  Velcome  BlueHive Getting Started FastX Alternate Connection Methods Using the Command Line Storage Transferring Files Running Jobs Cloud burst Software Installing Python Packages Compute Nodes	Installing Python Packages				
	The recommended way to install Python packages is to create and activate conda environment using miniconda. First, type				
	which will create a <pre>~/.condarc</pre> file that tells conda to store environments in your /scratch directory (this is good becau Then, create an environment using a particular <pre>miniconda3</pre> distribution, with the name and Python version of your choice				
	/software/miniconda3/4.12.0/bin/conda create -n MyEnvName python=3.9				
Web Applications     GitLab	source /software/miniconda3/4.12.0/bin/activate MyEnvName				

#### III. Using PyCharm in FastX

You can continue to work in Terminal, but a more convenient way is to use PyCharm as IDE in your browser (Terminal is available there as well). To do that you should connect to BlueHive via **FastX.** The link below will open FastX

BlueHive.CIRC			
My Sessions			
Launch Session Actions			Search Bookmarks
□ Name			Global Bookmarks My Bookmarks
a mate-session			
	Default Interactive OpenGL/3D		
	mate-sessiontime=8:00:00cpus-per-task=1mem=4g -p interactive	Single *	Launch Cancel
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	home/aselitsk 50%	20 GB	
	/scratch/aselitsk 0%	200 GB	
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	Terminal		
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	Files		

#### https://bluehive.circ.rochester.edu

In the **Launch Session 'Interactive'**, you can choose different nodes and time. It is important to indicate smaller time, because it will reduce the queuing time in the system.

```
Later, when you will need gpu, instead of
mate-session --time=8:00:00 --cpus-per-task=1 --mem=4g -p interactive
you can type
mate-session --time=0:15:00 --cpus-per-task=1 --mem=4g -p gpu-debug –gres=gpu
```

If you are using **Terminal**, to change partition you can type interactive -p gpu-debug -t 15 –gres=gpu

For a specific node, say 'bhp0001', you can use interactive -p debug -t 00:05:00 -w bhp0001

## The list of partitions can be found here

# https://info.circ.rochester.edu

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Compute Nodes - I	https://docs.conda		🔌 how to remove con	aselitsk Sessions	O Managing environ	📃 2021 Fall Pi		
Welcome <ul> <li>BlueHive</li> <li>Getting Started</li> </ul>		Con	npute No	odes				
FastX Alternate Connection Metho Using the Command Line Storage Transferring Files Running Jobs Software	Methods Line	Open partitions						
		partition		wall time limit	resource limit			
		debug		01:00:00	cpu=48, node=2			
		gpu		5-00:00:00	node=15			
Compute Nodes	•	gpu-debu	9	01:00:00	cpu=23, node=1			
Open partitions Restricted partitions		gpu-intera	ctive	12:00:00	cpu=23, node=1			

## To launch PyCharm, you go to Applications

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		qt	PC	2018.1.2		
		) netlogo	PC	2018.2.4		
			PC	2019.3.1		
			<b>E</b>	2021.1.1		

In File menu, create new project. Choose the location (File system of BlueHive could be slow) and use your environment (the path will be /home/YourNetID/.conda/envs/pyt/bin/python) and the conda module (the path is /software/miniconda3/4.9.2/bin/conda)

You can choose to create an empty project or with a "Hello World" main.py file.

Then you need to transfer the files of HW5 to the folder of the PyCharm's project

### IV. Transfer files from your computer to BlueHive and vice versa

There is information on <u>https://info.circ.rochester.edu</u> Including using the command line



But for graphical interface I would recommend FileZilla (see fig. below). You can transfer files from your PC to BlueHive as usual, but you'll be asked to confirm by Duo every transaction.

		<b>#</b> (		1 <b>.</b> L	sftp://aselitsk@bl	uehive.ci	rc.rochester.e	du - FileZilla	
Host:	bluehive.circ.roches	Username:	YourNetID	Password:	•••••	Port:	22 Qu	ickconnect	•
Status:       File transfer successful, transferred 265,755 bytes in 1 second         Status:       Retrieving directory listing of "/gpfs/fs1/home/aselitsk/PycharmProjects/pythonProject"         Status:       Listing directory /gpfs/fs1/home/aselitsk/PycharmProjects/pythonProject         Status:       Directory listing of "/gpfs/fs1/home/aselitsk/PycharmProjects/pythonProject" successful         Status:       Disconnected from server         Status:       Disconnected from server         Error:       FATAL ERROR: Operation timed out									
Local	site: /Users/airlab/Do	wnloads/HW5	5/			~	Remote site	: /gpfs/fs1/h	ome/as
	.cups							? .pki	
	oracle_jre_usa	age						? .ssh	
	.putty							? .ssh2	2

#### V. Submitting job on BlueHive

If you want to run your code for a long time or need to wait for a free gpu, you can submit your job and switch off your computer.

Example of submitting job (file 'a.py', environment 'pyt'): you need to write a bush-file, for example my.sh

#!/bin/bash
#SBATCH --partition=debug --output=out.log
date
hostname
echo Hi there
source /software/miniconda3/4.9.2/bin/activate pyt
python a.py

To submit the job, you should run in Terminal bash my.sh To see the job, use the command squeue -u <YourNetID> To terminate the job, write cancel <JobID>

To create/edit file in Terminal you can use command nano <FileName> (Ctrl+X to close) To delete rm <FileName> to create a folder mkdir <FolderName> to delete a folder rm -r <FolderName>

If you use Jupiter <u>https://jupyter.circ.rochester.edu/</u> use PyTorch environment there