PathoSense

Installation guide II

Installation Guide Part II - Install MinKNOW and test GPU basecalling

This procedure explains how to install and test the MinKNOW software to enable sequencing and GPU basecalling.
Basecalling is the process of converting the raw sequencing signal from the sequencer and converting that to the actual DNA sequence. This is computationally very intensive and requires the GPU to be correctly configured.

Prerequisites

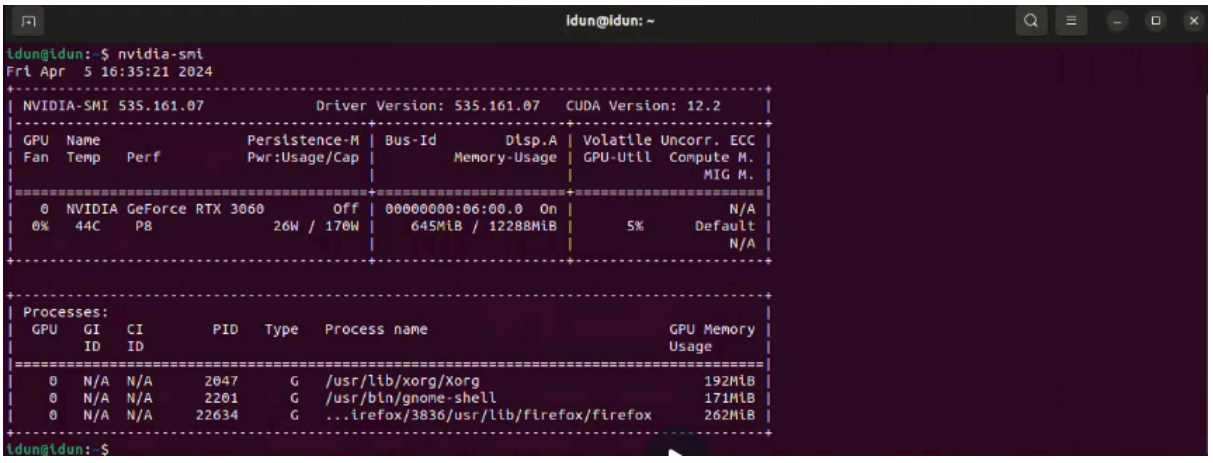
- Installation Guide Part I - Install Ubuntu 22.04 was completed.
- Downloaded the provided testset to use for basecalling

II.I Test if the GPU is correctly configured

1. Open your applications by pressing the tile in the bottom left corner
2. Type in “Terminal” and open the terminal
3. In the terminal, type the command:

   ```
   nvidia-smi
   ```

4. You should get a similar output to what is shown here.



If you get an error message, follow the steps listed under section ‘Command Line Nvidia Installation Method’ on this link:

https://linuxconfig.org/how-to-install-the-nvidia-drivers-on-ubuntu-22-04

Retry running the nvidia-smi command to see if the issue is solved.

PathoSense

Installation guide II

II.II Install MiNKNOW software

1. Go to the NanoPore community website (https://community.nanoporetech.com/) and log in with your log in credentials.

   You will get access to the MinKNOW community once you have purchased their products.

2. Click ‘software downloads’ in the side bar. On that software downloads page, look for the the MinKNOW Software for the MinION Mk1B
3. Press the **Lunix GPU Installer**
4. Open the terminal
5. Enter the commands for your Ubuntu (or the latest, if your ubuntu version is not yet available) from section 1
6. Enter the commands from the ‘GPU version’ from section 2. When asked, press “Y” and enter
7. MinKNOW should now be installed. Open your applications by pressing the tile in the bottom left corner, and start typing MinKNOW and open MinKNOW.
8. Enter the same credentials that were used to log in on the NanoPore community website.
9. Skip the tutorials.

II.III Test GPU basecalling on the testset

Basecalling converts raw signal files (.pod5) to the sequence files (.fastq). After the PathoSense diagnostic runs. These fastq files will be sent to PathoSense for analysis through CloudLink (see later in installation guide part III). As this is a sensitive step that requires the GPU to be configured correctly, it is important we test if this conversion works.

1. In your home directory, make a folder named ‘PathoSense_Diagnostics’
2. Open a terminal
3. Enter the following commands to ensure MinKNOW has access to the created folder, and your user will have access to the MinKNOW output.

   sudo usermod -a -G minknow $USER

   sudo chmod -R a+rxw PathoSense_Diagnostics/

   sudo setfacl -PRdm u::rwx,g::rwx,o::rwx PathoSense_Diagnostics/

   sudo usermod -a -G $USER minknow

4. Reboot the computer
5. Download the zipped test sequencingrun provided by PathoSense
6. Extract the zipped test sequencingrun (provided by PathoSense) to the newly made PathoSense_Diagnostics folder.
7. Open the MinKNOW software
8. Press Start > Analysis > Basecalling

9. As the input folder, select the pod5_pass folder nested a few levels deep in the test sequencing folder.
10. Make sure the toggle to process data in sub-directories is enabled
11. Continue
12. Leave the default output folder
13. Continue. Enter:
    - Flow cell product code: FLO-MIN114
    - Chemistry: DNA - 400 bps - 5kHz
    - Model: Super-accurate basecalling
14. Continue. Enter:
    - Barcoding kits: SQK-RBK114-24
15. Continue > Continue > Start

If the basecalling finishes succesfully, everything is set up correctly.