For Python 3.10, use **TensorFlow 2.10** with **CUDA 11.2** and **cuDNN 8.1** for the most reliable setup. You can install these in a Conda environment with:

conda create -n tf\_env python=3.10

conda activate tf\_env

conda install cudatoolkit=11.2 cudnn=8.1 -c=conda-forge

pip install tensorflow-gpu==2.10

**Install CUDA 11.2**

* **Action**:
  + Download CUDA Toolkit 11.2.0 from [NVIDIA’s CUDA 11.2 archive](https://developer.download.nvidia.com/compute/cuda/11.2.0/local_installers/cuda_11.2.0_460.89_win10.exe) (select Windows, appropriate architecture, e.g., x86\_64).
  + Install CUDA 11.2, ensuring you include the core components (e.g., libraries, runtime).
  + Add to PATH: C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v11.2\bin and C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v11.2\lib\x64.
  + Verify: Run nvcc --version. It should show CUDA 11.2 (e.g., Cuda compilation tools, release 11.2, V11.2.x).

**Install cuDNN 8.1**

* **Action**:
  + Download cuDNN 8.1 for CUDA 11.2 from [NVIDIA’s cuDNN archive](https://developer.nvidia.com/rdp/cudnn-archive) (requires NVIDIA Developer account).
  + Extract the cuDNN zip file.
  + Copy the contents to the CUDA 11.2 directory:
    - bin\cudnn\*.dll → C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v11.2\bin
    - include\cudnn\*.h → C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v11.2\include
    - lib\x64\cudnn\*.lib → C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v11.2\lib\x64
  + Ensure the bin directory is in your PATH.

Run the following Python script to verify GPU support:

import tensorflow as tf

print("TensorFlow Version:", tf.\_\_version\_\_)

print("CUDA Version:", tf.sysconfig.get\_build\_info()['cuda\_version'])

print("cuDNN Version:", tf.sysconfig.get\_build\_info()['cudnn\_version'])

print("GPU Available:", tf.test.is\_gpu\_available())

print("Physical Devices:", tf.config.list\_physical\_devices('GPU'))

**Expected Output**:

* TensorFlow version: 2.10.0
* CUDA Version: 11.2
* cuDNN Version: 8.1
* GPU Available: True
* Physical Devices: List of your GPU(s), e.g., [PhysicalDevice(name='/physical\_device:GPU:0', device\_type='GPU')]