Safe Installation Guide: NVIDIA HPC SDK 25.3 with `nvc` on Ubuntu

Ultimate Safe Guide: Installing NVIDIA HPC SDK 25.3 with `nvc` on Ubuntu (2025)

What You'll Get:
- `nvc`, `nvc++`, `nvfortran` compilers (OpenACC, OpenMP)
- Optional MPI compiler wrappers
- Compatible CUDA runtime and headers
- Everything isolated under /opt/nvidia/hpc_sdk

What You Won't Touch:
- NVIDIA GPU drivers (you already have working ones)
- System Python, system CUDA, or kernel modules
- Secure Boot
- APT / system package manager

Requirements:
- Ubuntu (22.04, 24.04, etc.)
- `nvidia-smi` working
- ~5 GB free disk space
- No need to remove `nvidia-cuda-toolkit`

STEP 1 -- Prepare the install folder
sudo mkdir -p /opt/nvidia/hpc_sdk
sudo chown $USER:$USER /opt/nvidia/hpc_sdk

STEP 2 -- Download and extract the installer
cd ~/Downloads
wget https://developer.download.nvidia.com/hpc-sdk/25.3/nvhpc_2025_253_Linux_x86_64_cuda_12.8.tar.gz
tar xpzf nvhpc_2025_253_Linux_x86_64_cuda_12.8.tar.gz nvhpc_2025_253_Linux_x86_64_cuda_12.8/install
cd nvhpc_2025_253_Linux_x86_64_cuda_12.8

STEP 3 -- Run the installer (safe method)
sudo ./install

Choose:

1 -- Single System Install
Accept default path: /opt/nvidia/hpc_sdk
Accept CUDA/toolchain defaults
Driver will not be installed if it's already working -- SAFE

STEP 4 -- Set up environment variables (one-time)
nano ~/.bashrc

Add at the bottom:
export NVHPC=/opt/nvidia/hpc_sdk
export PATH=$NVHPC/Linux_x86_64/25.3/compilers/bin:$PATH
export MANPATH=$NVHPC/Linux_x86_64/25.3/compilers/man:$MANPATH
export LD_LIBRARY_PATH=$NVHPC/Linux_x86_64/25.3/compilers/lib:$LD_LIBRARY_PATH
export PATH=$NVHPC/Linux_x86_64/25.3/comm_libs/mpi/bin:$PATH

Then run:
source ~/.bashrc

STEP 5 -- Verify your installation
nvc --version

STEP 6 -- Test OpenACC (Optional)
Create hello.c:
```
#include <stdio.h>
int main() {
    #pragma acc parallel loop
    for (int i = 0; i < 10; ++i)
        printf("Hello from i = %d\n", i);
    return 0;
}
```

Compile and run:
nvc -acc hello.c -o hello
./hello

Done!
- `nvc` ready every time
- Drivers untouched

- Full OpenACC/CUDA setup complete