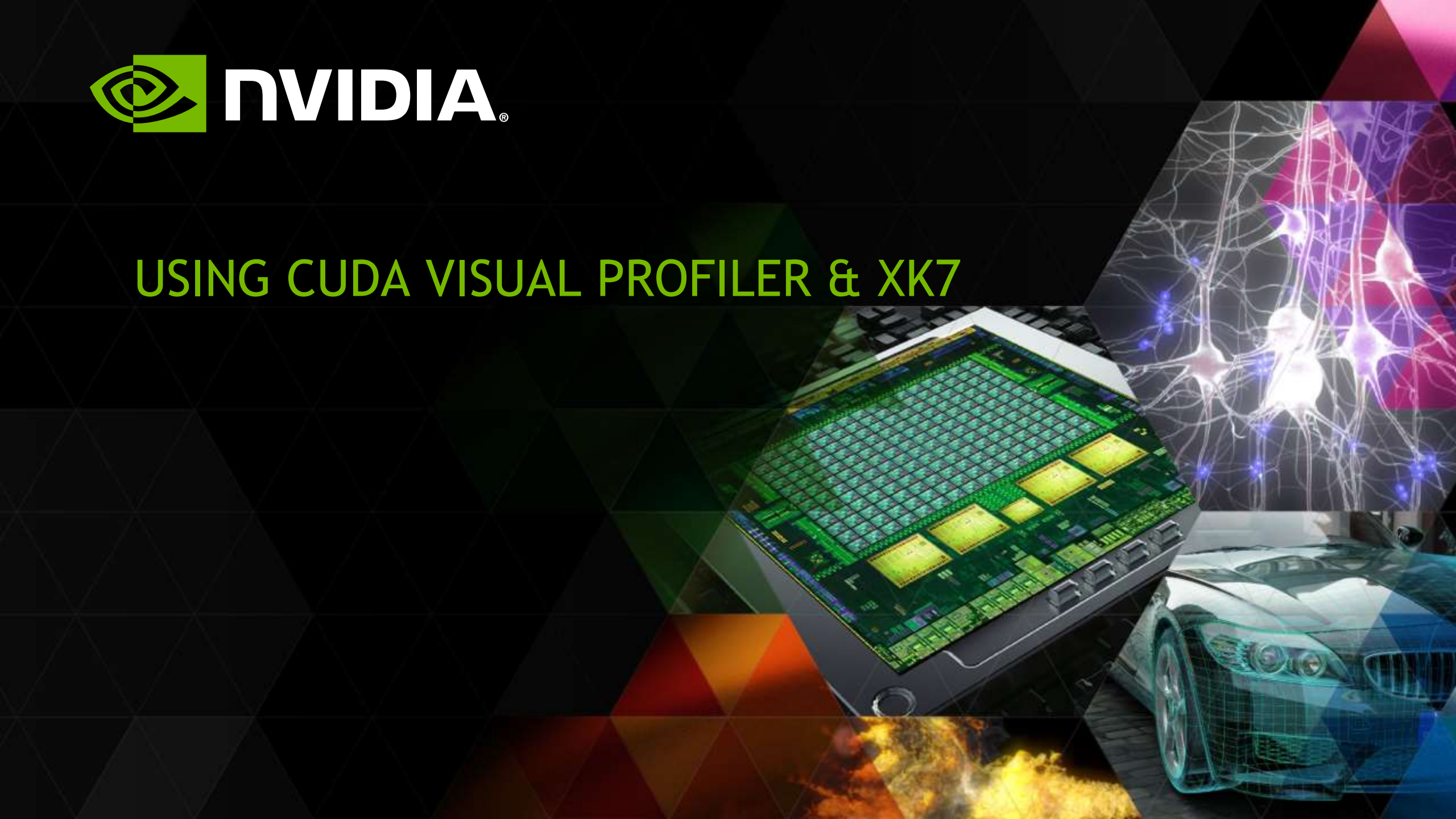
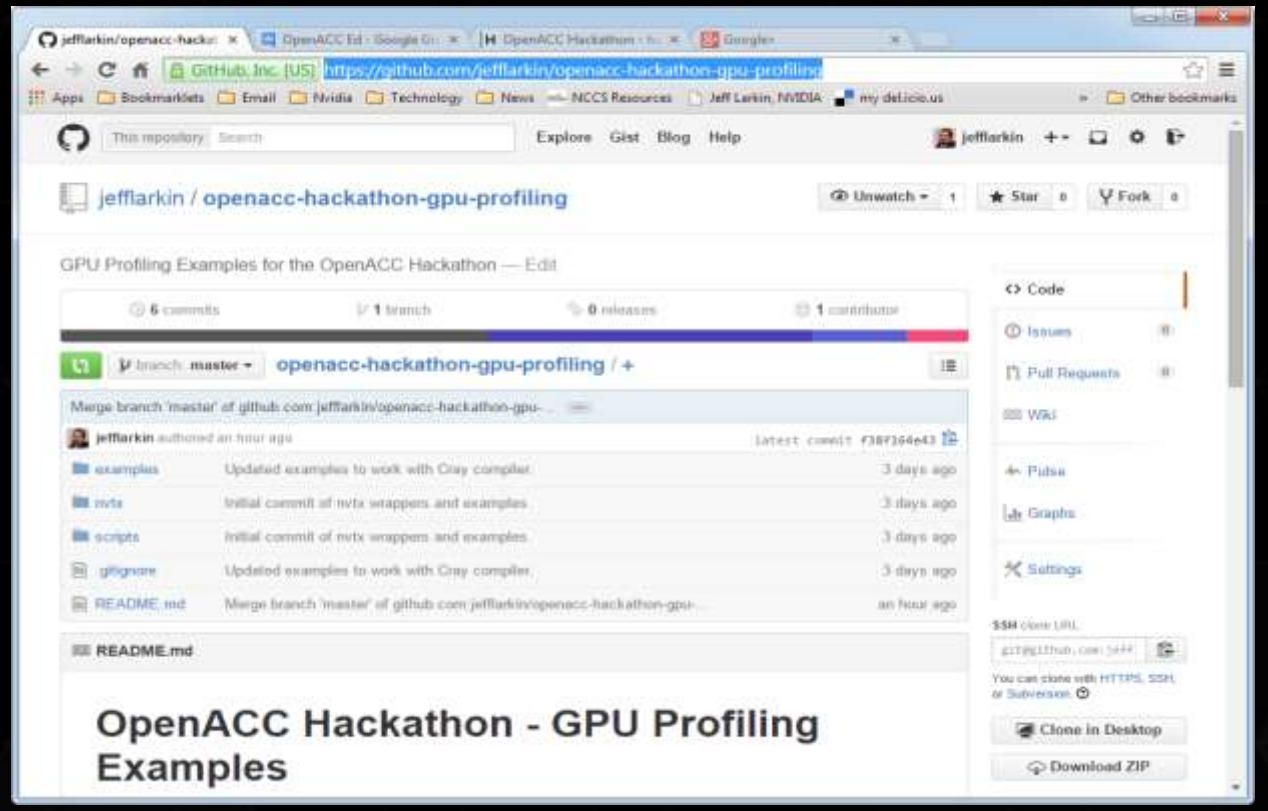

NVIDIA
USING CUDA VISUAL PROFILER & XK7

SCRIPTS & EXAMPLE CODE

- Go get my code from

  https://github.com/jefflarkin/openacc-hackathon-gpu-profiling



CUDA VISUAL PROFILER

- The CUDA Visual Profiler is included with the CUDA Toolkit. You will get best performance if you install it locally.

- https://developer.nvidia.com/cuda-downloads

- You should not need a CUDA-capable GPU to install this, but you will need to download the entire toolkit (~1GB)
  - Since this is a shared WIFI, please wait until after the event to download or see Jeff Larkin for a thumbdrive for Windows/Linux/Mac.

GATHER A PROFILE

1. Set PMI_NO_FORK=1 in your environment
2. Add the nvprof_timeline.sh script before your application in your aprun command.
3. Copy the resulting *.nvprof files to your local machine.

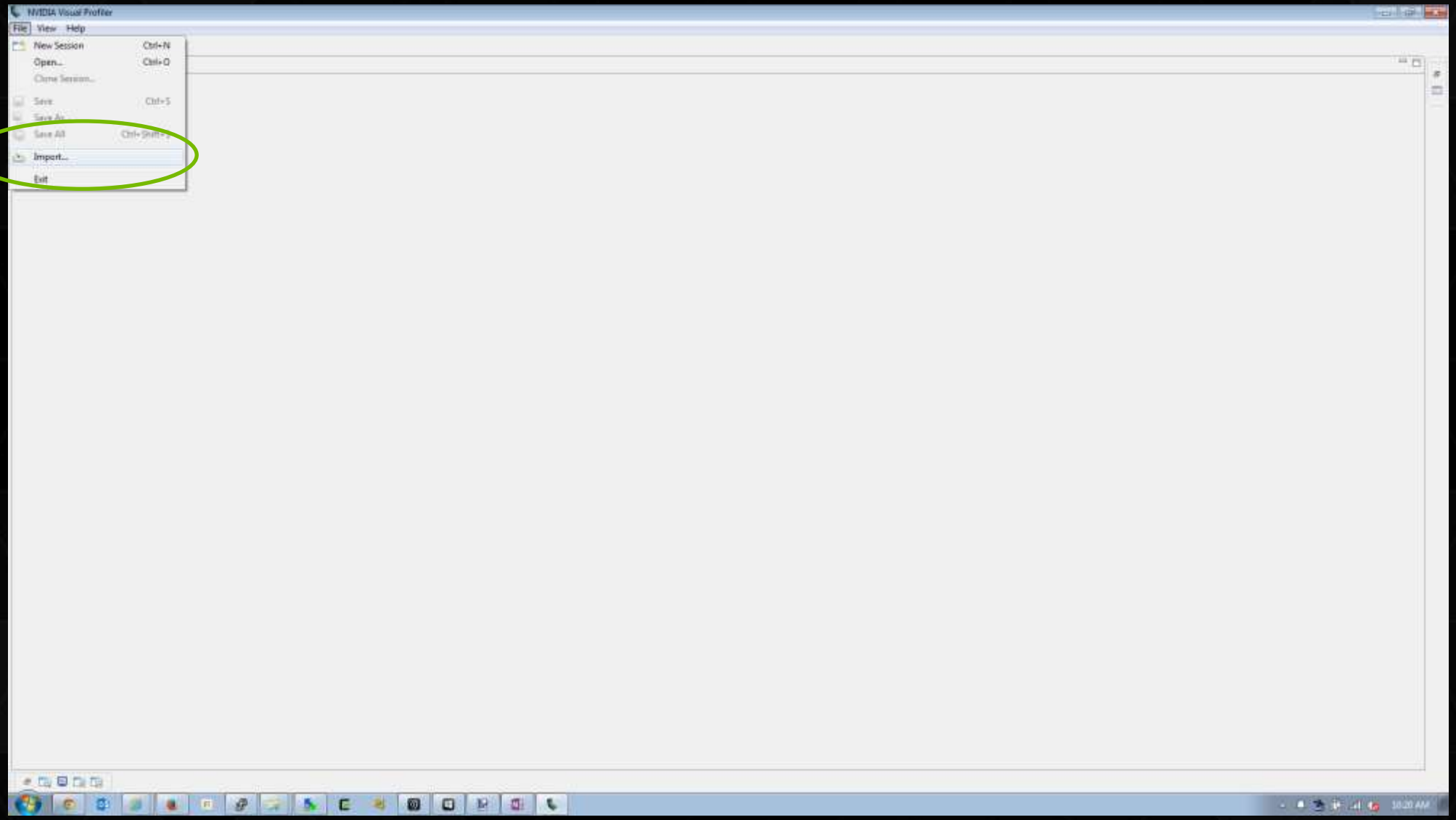
```
$ export PMI_NO_FORK=1

$ aprun –n ### -N 1 ./nvprof_timeline.sh ./a.out ...
```

TIP: PROFILE 1 MPI RANK

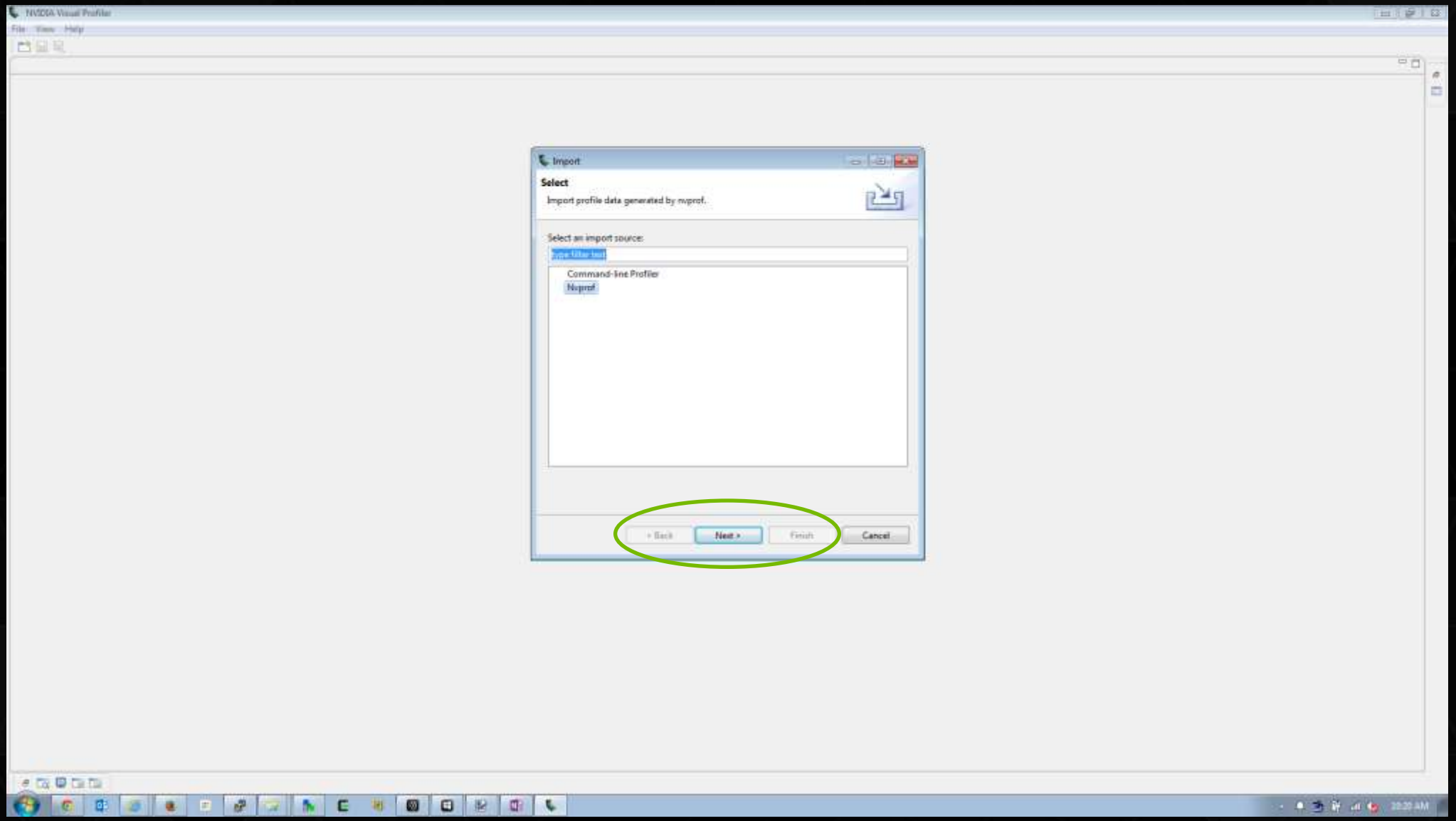
- Cray's aprun allows has MPMD mode, which can be used to only profile a single instance of your MPI program, reducing the number of files to analyze:

```
$ aprun –n <ranks – 1> -N 1 ./a.out : \
        -n 1 –N 1 ./nvprof_timeline.sh ./a.out
```

IMPORT INTO CUDA VISUAL PROFILER



IMPORT INTO CUDA VISUAL PROFILER



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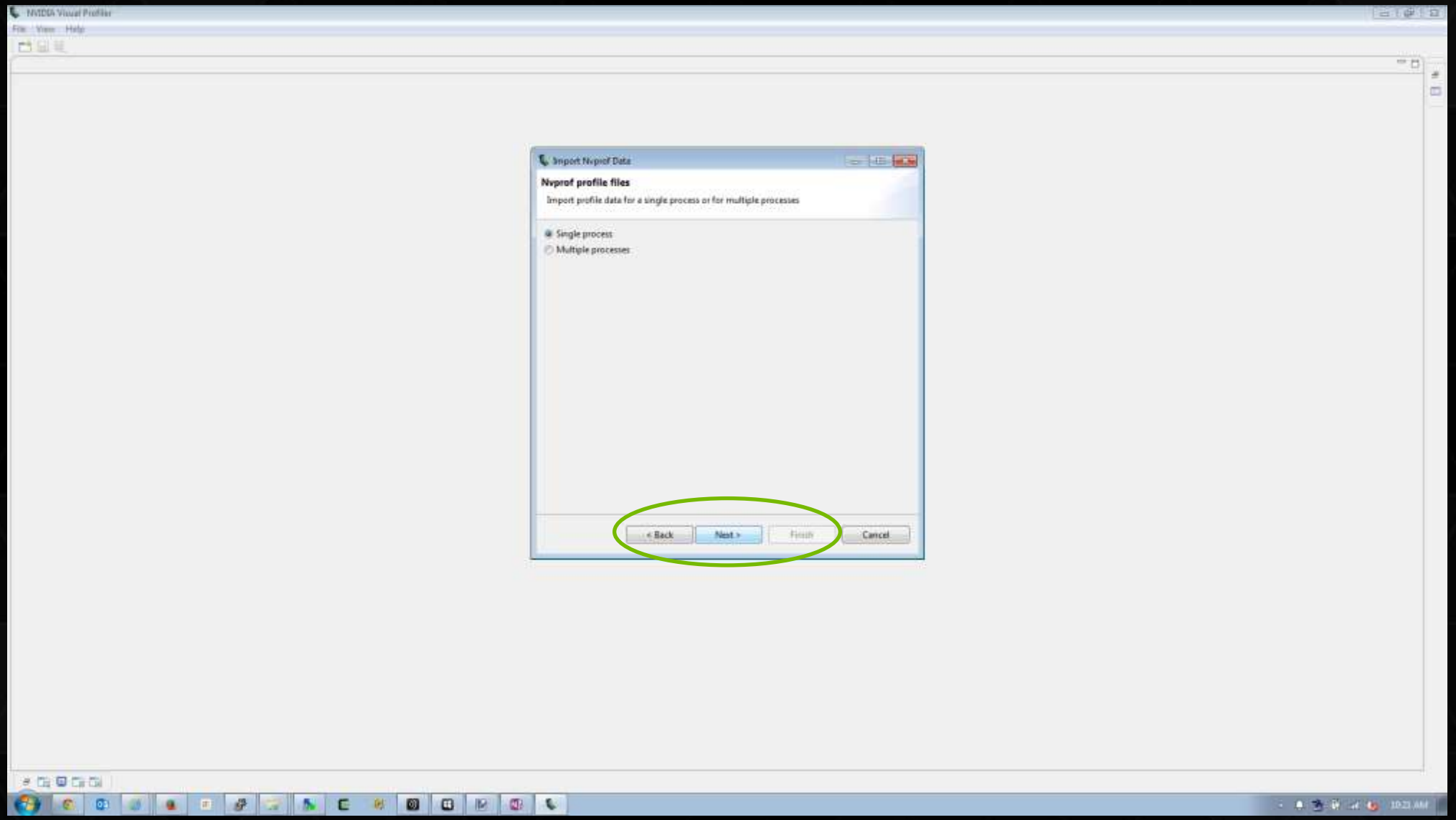

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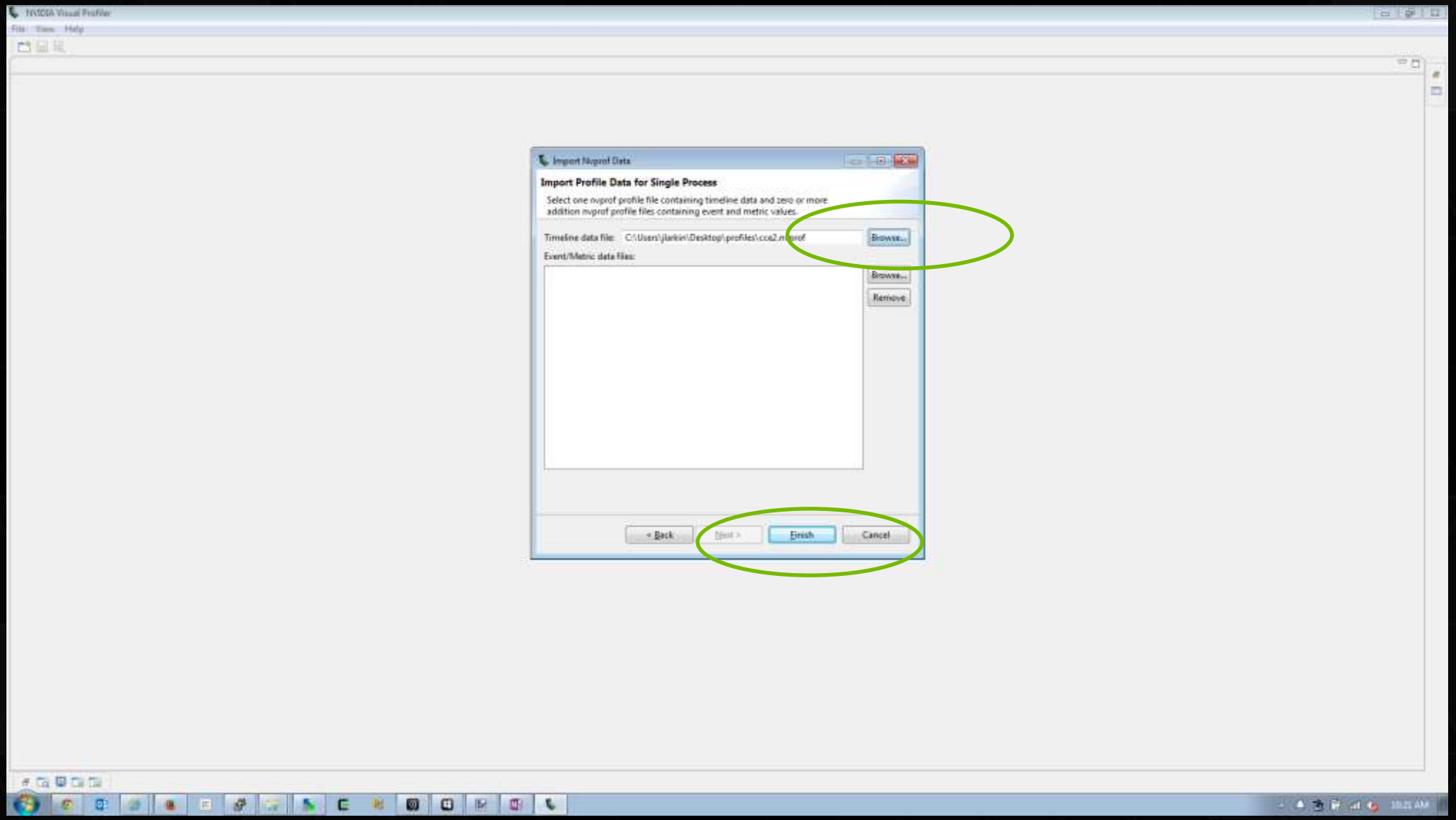

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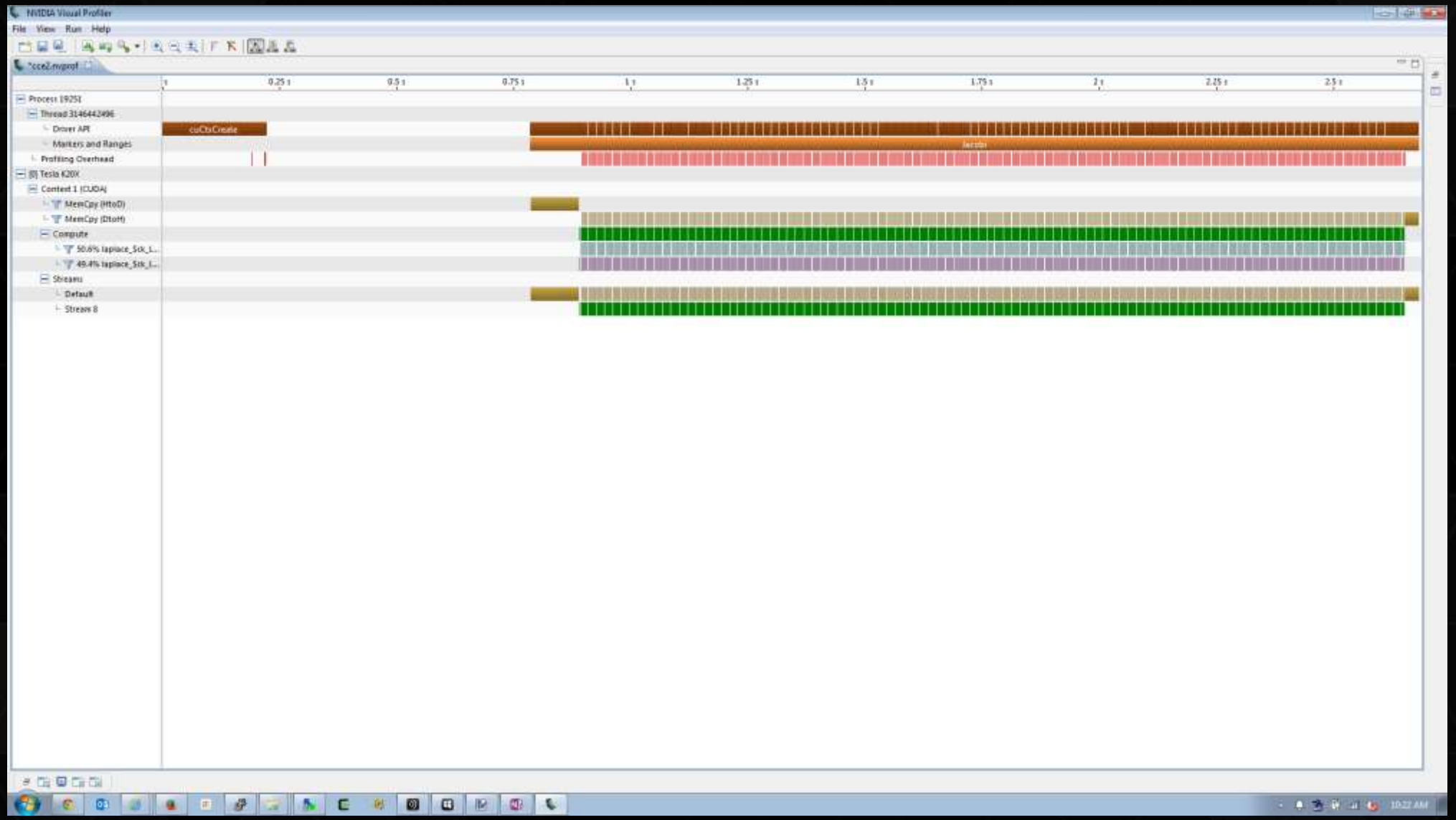

ADVANCED: ANNOTATE THE TIMELINE

- The NVIDIA Tools Extensions (NTVX) can be used to annotate your timeline to tie the timeline to your code.
- See the `examples` subdirectory of the earlier code.
- For Fortran, it will be necessary to use the wrappers provided in the `nvtx` subdirectory.

ADVANCED: ANNOTATE THE TIMELINE