

GPU benchmarking with CMS software

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Which GPU benchmarks?

- Synthetic GPU benchmarks make almost no sense for HEP
 - GPU usage is too application-dependent
- Only solution is to use real applications
 - As we saw, CMS already has them!
 - Pixel reconstruction
 - HCAL reconstruction

How to create the benchmark

1. Get all the executables and binaries
2. Get the input data and prepare it
3. Have a script that runs Patatrack and extracts a score
4. Package everything in a Docker image
5. Distribute it!

Where are we?

- Simplified instructions to run the job by hand
 - <https://github.com/sciaba/patatrack-tests>
- CMS Open data set as input
 - In the working group EOS project space, takes 5 GB
- Scripts to build the Docker image
 - <https://github.com/vkhristenko/>
 - (the latest version is not yet committed)
- Image
 - Very large, about 50 GB – to become much smaller once the binaries are in CVMFS
 - All configuration parameters still hard-coded
 - Not yet publicly available
 - Still needs network connection for Frontier

Next steps

- Configurable running parameters
- Distribute the image
- Integrate with CI system
- Support both tracker and HCAL reconstruction
 - Two different scores?