

## OpenCV 3.4 C++ Cuda acceleration takes more time than CPU

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I am testing OpenCV GPU acceleration with CUDA but GPU is slower than CPU. Is it only about median filter or am I doing something wrong in my code? And Why is pure process time on GPU higher than CPU?

Output:

```
Device 0: "GeForce GT 330M" 1023Mb, sm_12 (not Fermi),
48 cores, Driver/Runtime ver.6.50/6.50
Size of the Image: 512 x 512
GPU Time Includes up&download Times: 8531/100 = 85ms
GPU Time Includes only 'apply': 8307/100 = 83ms
CPU Time: 1855/100 = 18ms
```

Code:

```
void CPUvsGPU()
{
    QElapsedTimer timer;
    Mat cSrc;
    Mat cGray;
    cuda::GpuMat gGray;
    cuda::printShortCudaDeviceInfo(cuda::getDevice());
    cSrc = imread("baboon.jpg");
    cout << "Size of the Image: " << cSrc.size << endl;

    cvtColor(cSrc, cGray, COLOR_BGR2GRAY);

    gGray.upload(cGray);

    Mat cOut(cGray.size(), CV_8U);
    cuda::GpuMat gOut(gGray.size(), CV_8U);

    Ptr<cuda::Filter> mf;
    mf = cuda::createMedianFilter(CV_8UC1, 9);

    mf->apply(gGray, gOut); //don't measure first operation's time on GPU

    timer.start();
    for (int i = 0; i < 100; i++)
    {
        gGray.upload(cGray);
        mf->apply(gGray, gOut);
        gOut.download(cOut);
    }
    cout << "GPU Time Includes up&download Times: " << timer.elapsed() << "/100 = " << timer.elapsed()/100 << "ms" << endl;

    timer.start();
    for (int i = 0; i < 100; i++)
        mf->apply(gGray, gOut);
    cout << "GPU Time Includes only 'apply': " << timer.elapsed() << "/100 = " << timer.elapsed()/100 << "ms" << endl;

    timer.start();
```

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edited Apr 5 '18 at 12:56



underscore\_d

3,122 ● 3 ● 20 ● 45

asked Apr 5 '18 at 11:59



fftty

458 ● 2 ● 11 ● 38

1

You are running on what is literally one of the smallest and slowest CUDA GPUs ever made. Perhaps a better question is why you would expect the GPU be faster? – [talonmies](#) Apr 5 '18 at 12:28

@talonmies Everything is clear now :) What is the main criteria of the fast CUDA GPU? Number of CUDA cores, frame buffer, clock speed or anything else? – [fftty](#) Apr 5 '18 at 13:49

yes cuda cores is a factor but it's relative to clock speed as well as memory speed, so yes 48 cuda cores is not that much (I have 1050 ti with 768 cuda cores and it's not the best on the market) – [unique\\_ptr](#) Apr 5 '18 at 14:24

median filter should not be so great on gpu, too. – [Micka](#) Apr 5 '18 at 16:41

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Try to look at this [link](#), your GPU is listed in legacy GPUs.

Also try to look in [GPU versions of OpenCV algorithms slower than CPU versions on my machine?](#) and in [Why Opencv GPU code is slower than CPU?](#) for other problems to take into consideration when doing comparison. The acceleration you get isn't same for all functions. Some get small enhancement and some a very remarkable speed.

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edited Apr 5 '18 at 15:09

answered Apr 5 '18 at 12:51



Kadi Soheilb  
123 ● 1 ● 9

Your first sentence is incorrect. The GPU is listed [here](#) and supports CUDA, albeit only through CUDA 6.5. However since OP's posting clearly indicates use of CUDA 6.5, I don't see any evidence to support your statement. – Robert Crovella Apr 5 '18 at 14:51

@RobertCrovella Thank you for your comment. I have removed the wrong statement. I haven't looked at legacy list. – Kadi Soheilb Apr 5 '18 at 15:11

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

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