Report on Labwork 5

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1 Explain how you implement the Gaussian Blur filter?

For Gaussian Blur Convolution, I tried to implement with CPU, GPU without shared memory, and GPU with shared memory. Without shared memory, each thread stores its own kernel array. Meanwhile, when using shared memory, all threads in a block using one shared kernel array.
The results for block size of (32,32):

```
Labwork 5 CPU ellapsed 169.1ms
Labwork 5 GPU with shared memory ellapsed 6.2ms
Labwork 5 GPU without shared memory ellapsed 10.1ms
GPU without shared memory is faster than CPU: 16.78 times
GPU with shared memory is faster than CPU: 27.49 times
GPU with shared memory is faster than GPU without shared memory: 1.64 times
```

2 Try experimenting with different 2D block size values?

- Block size of (64 , 64)

  ```
  Labwork 5 CPU ellapsed 156.9ms
  Labwork 5 GPU with shared memory ellapsed 14.2ms
  Labwork 5 GPU without shared memory ellapsed 13.1ms
  GPU without shared memory is faster than CPU: 11.93 times
  GPU with shared memory is faster than CPU: 11.05 times
  GPU with shared memory is faster than GPU without shared memory: 0.93 times
  ```

- Block size of (128 , 128)

  ```
  Labwork 5 CPU ellapsed 159.9ms
  Labwork 5 GPU with shared memory ellapsed 9.9ms
  Labwork 5 GPU without shared memory ellapsed 13.4ms
  ```

```
GPU without shared memory is faster than CPU: 11.96 times
GPU with shared memory is faster than CPU: 16.13 times
GPU with shared memory is faster than GPU without shared memory: 1.35 times
```