High Performance Computing
Assignment #4

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1. Part (a)

(a) Original image, size: 1280×720

(b) Output image after 1 iteration of blurring

Figure 1: run repeatedly 100 times, 16×16 workitems

As a result of increasing the number of workitems, the performance on GPU decreases but the increases on CPU.

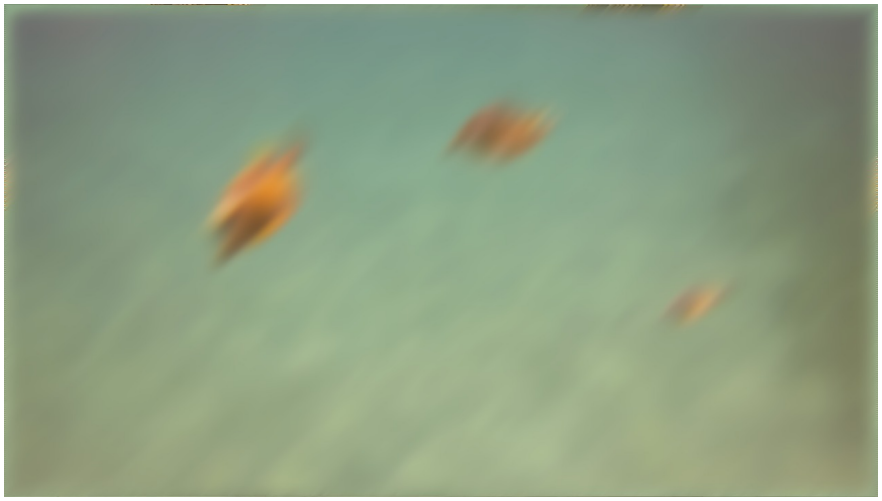
GPU/CPU model	Total time (s)	MPixels/s	GBits/s	GFlops/s
Intel(R) Core(TM) i3-2120 CPU @ 3.30GHz	0.172978	5.327835	0.170491	1.037467
GeForce GTX TITAN Black	0.001586	581.255344	18.600171	113.185453
AMD Cypress	0.004423	208.345356	6.667051	40.570231
NVIDIA Tesla T10	0.006643	138.730690	4.439382	27.014454

Table 1: Run repeatedly 100 times, 16×16 workitems

GPU/CPU model	Total time (s)	MPixels/s	GBits/s	GFlops/s
Intel(R) Core(TM) i3-2120 CPU @ 3.30GHz	0.029974	30.746817	0.983898	5.987200
GeForce GTX TITAN Black	0.002282	403.932833	12.925851	78.656173

Table 2: Run repeatedly 100 times, 32×32 workitems

2. Part (b)



(a) Output image after blurring recursively 100 times

(b) Output image after blurring recursively 200 times

(c) Output image after blurring recursively 300 times

Figure 2: run iterative 100, 200, 300 times, 16×16 workitems