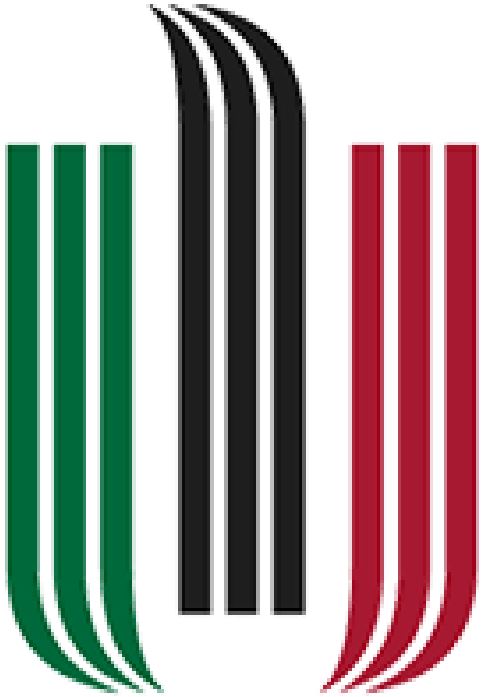

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Introduction to CUDA and OpenCL

Lab 5

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1. Table presenting computations times for different sizes of matrices based on the place where they were taken.

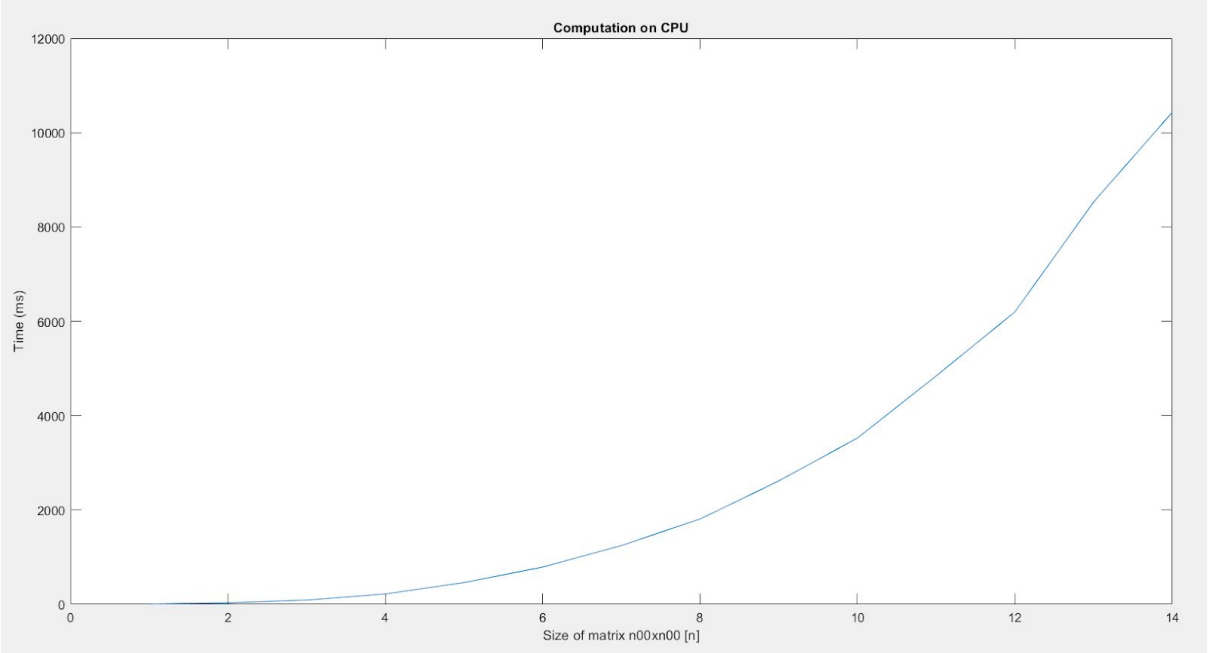
	Time based on computation place (ms)			
Size of matrix	CPU	GPU NAIVE	GPU cuBLAS	GPU SHARED
100x100	5.432900	0.280000	362.157501	0.319900
200x200	31.840799	0.750300	367.124298	0.948300
300x300	88.831200	1.797100	369.035309	2.449300
400x400	219.059906	4.306000	374.974915	5.176900
500x500	461.321289	8.865000	376.754089	10.560000
600x600	788.520325	14.802000	373.744507	17.373501
700x700	1246.254272	23.363199	373.794006	26.926701
800x800	1807.788452	34.908001	365.082794	39.411400
900x900	2615.325684	48.656601	359.723206	57.877602
1000x1000	3525.576904	64.565201	363.462585	77.126801
1100x1100	4841.441406	87.624603	363.589905	93.605499
1200x1200	6197.260742	114.293999	369.746002	98.877800
1300x1300	8526.397461	144.321396	365.561493	125.763000
1400x1400	10429.437500	167.416306	357.870087	155.248596

Time needed to moving data to GPU from CPU was almost constant plus, minus 5ms from 1055ms

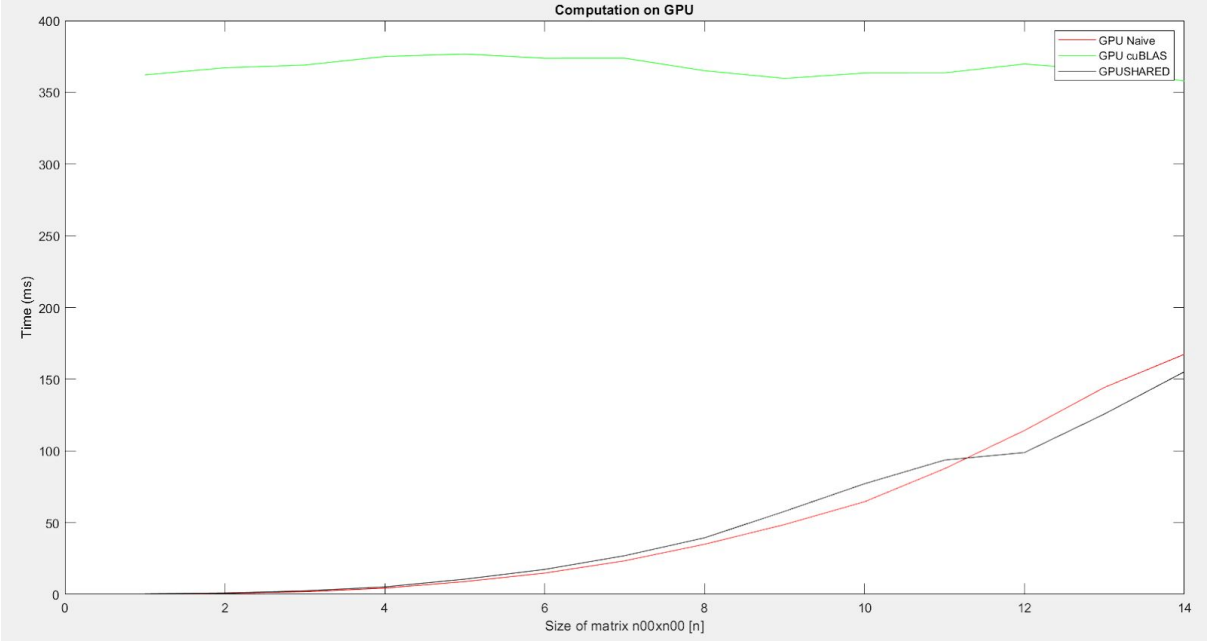
CPU - matrices were computed on CPU
GPU - depend on method matrices were computed with different times. Shared memory gave a little better result than standard way of computing multiplication of matrices. Using

special library cuBLAS gives awesome results with much bigger matrices, which will be shown later.

2. Chart presenting computation time on CPU based on the size of matrices



3. Chart presenting computation time on GPU based on the size of matrices



4. Big matrices

	Time based on computation place (ms)			
Size of matrix	CPU	GPU NAIVE	GPU cuBLAS	GPU SHARED
1400x1400	10429.437500	167.416306	357.870087	155.248596
2000x2000	38824.210938	438.627899	386.613892	448.663696
4000x4000	381835.03125	3336.105713	480.328186	3634.929688

As we can see in the chart above first noticeable difference in computing matrices multiplication time using GPU cuBLAS we observe at significantly higher size of matrix (4000x4000). There is a right use of this tool - big matrices.