Assignment 1

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November 2023

0.1 Task1

0.1.1 1.List the main differences between GPUs and CPUs in terms of architecture.

1. CPU has tens of massive cores, CPU excels at irregular control-intensive work . Lots of hardware for control, fewer ALUs

2. GPU has thousands of small cores, GPU excels at regular math-intensive work . Lots of ALUs, little hardware for control

0.1.2 2.Top 500

1. In top 10 computer, All computer except Chinese TaihuLight use GPU, while 5 of them are provided by Nvidia and 2 from AMD 1 from Fujitsu, 1 from Matrix.

2. Power Efficiency

	Rmax (PFlop/s)	Power (kW)	Power Effciency
Frontier	1,102.00	21,100	0.0522
Fugaku	442.01	29,899	0.014783
LUMI	151.9	2942	0.0511
Leonardo	148.60	10,096	0.0147187
Summit	94.64	7438	0.01272
Sierra	93.01	15,371	0.00605
Sunway TaihuLight	70.87	2589	0.0273
Perlmutter	63.46	2646	0.02398
Selene	61.44	18,482	0.00332
Tianhe-2A	46.1	921	0.05