

Parallel and Distributed Computing  
HW05  
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**1. For mydata struct for storing point-cloud points, which is the better data layout for performance? SoA or AoS?**

```
$ srun -N 1 -w gpu0 ./soa.exe Site_56_college_division.pts 36 18 100 Site.ply
```

```
$ srun -N 1 -w gpu0 ./aos.exe Site_56_college_division.pts 36 18 100 Site.ply
```

	t0	t1	t2	t3	total
SoA	4.32994	0.38403	6.403e-5	4.15342	8.87
AoS	2.89937	0.283524	8.4118e-5	3.53723	6.72

From the results, AoS has the better data layout for performance.

**4. For voting process, how much speedup did you obtain comparing to your serial code?**

The serial code is from my HW02.

```
$ srun -N 1 -w gpu0 ./aos.exe Site_56_college_division.pts 36 18 100 Site.ply
```

```
$ srun -N 1 -w gpu0 ./main.exe Site_56_college_division.pts 18 9 100 100 Site.ply
```

	Voting process
OpenCL	6.00667
Serial	0.283524

From the results, the OpenCL version has speedup about 2118.5%.