

MPI Matrix-Vector Multiplication

Run on Penguin Cluster

Compiled with -O3

Ten iterations, min run time

p = 1 is serial code

Runtime (in ms) n

p	Method	800	1600	3200	6400
1	Serial	2.5	9.8	38.9	163.7
4	Row Dist	1.5	3.2	10.5	39.4
4	Col Dist	1.3	3.1	10.4	39.3
4	Submat Dist	1.3	3.1	10.6	39.9
16	Row Dist	1.5	2.1	3.8	11.5
16	Col Dist	1.3	2.0	3.8	11.7
16	Submat Dist	1.3	1.9	3.7	11.3

Speedup n

p	Method	800	1600	3200	6400
1	Serial	1.0	1.0	1.0	1.0
4	Row Dist	1.6	3.1	3.7	4.2
4	Col Dist	2.0	3.2	3.7	4.2
4	Submat Dist	2.0	3.1	3.7	4.1
16	Row Dist	1.7	4.6	10.3	14.3
16	Col Dist	1.9	4.8	10.1	14.0
16	Submat Dist	2.0	5.3	10.4	14.4

Efficiency n

p	Method	800	1600	3200	6400
1	Serial	1.00	1.00	1.00	1.00
4	Row Dist	0.41	0.77	0.93	1.04
4	Col Dist	0.49	0.79	0.94	1.04
4	Submat Dist	0.49	0.78	0.92	1.03
16	Row Dist	0.11	0.29	0.64	0.89
16	Col Dist	0.12	0.30	0.63	0.87
16	Submat Dist	0.12	0.33	0.65	0.90