NP/NPRMPI RELATIVE PERFORMANCE

Timing Results, number of cores $1, \ldots, 4$

Due to small sample sizes some demos may not show appreciable gains with respect to increasing the number of cores. Where possible we have bumped up sample sizes in the hopes that the larger sample sizes will show expected scaling benefits.

(1) Note that the functions npconmode, npcmstest, and npqreg use actual datasets so these are restricted unless we wish to go with fully simulated data (an entry of $n = 0$ indicates the example uses a dataset)
(2) Note that currently the function npregiv is serial only hence no speedup (in fact overhead from message passing will slow it down as the number of cores increases)
(3) Note that currently the function npscoef and npglpreg are not fully MPI aware as the ridging occurs outside of a call to npksum() hence is processed serially and not in parallel

The table below presents Seconds with respect to the number of cores followed by the ratio (Secs(1) versus Secs(2) for instance). Note that an entry of $n = 0$ indicates the example uses a dataset hence the number of observations cannot be modified.

Function	n	Secs(1)	Secs(2)	Ratio	Function	n	Secs(1)	Secs(3)	Ratio
npcdensls	1000	457.2	228.0	0.50	npcdensls	1000	457.2	167.4	0.37
npcdensml	2500	35.2	18.0	0.51	npcdensml	2500	35.2	12.3	0.35
npcdistls	2000	82.9	42.1	0.51	npcdistls	2000	82.9	37.3	0.45
npcmstest	616	9.8	5.8	0.59	npcmstest	616	9.8	4.4	0.45
npconmode	189	8.7	5.3	0.61	npconmode	189	8.7	4.2	0.48
npcopula	5000	5.0	3.1	0.61	npcopula	5000	5.0	3.1	0.61
npdeneqtest	2500	33.6	17.2	0.51	npdeneqtest	2500	33.6	11.7	0.35
npdeptest	2500	41.5	21.1	0.51	npdeptest	2500	41.5	14.6	0.35
npglpreg	1000	282.7	177.8	0.63	npglpreg	1000	282.7	134.2	0.47
npindexich	5000	18.1	9.6	0.53	npindexich	5000	18.1	6.7	0.37
npindexks	5000	24.1	12.5	0.52	npindexks	5000	24.1	8.9	0.37
npplreg	1000	9.8	5.8	0.59	npplreg	1000	9.8	4.3	0.43
npqreg	1008	26.2	14.3	0.55	npqreg	1008	26.2	12.3	0.47
npregiv	2500	135.4	100.7	0.74	npregiv	2500	135.4	97.3	0.72
npreglcaic	5000	153.4	79.1	0.52	npreglcaic	5000	153.4	53.2	0.35
npreglcls	5000	152.3	77.9	0.51	npreglcls	5000	152.3	52.3	0.34
npregllaic	5000	94.5	63.9	0.68	npregllaic	5000	94.5	48.9	0.52
npreglls	5000	92.3	62.7	0.68	npreglls	5000	92.3	48.0	0.52
npscoef	10000	41.2	23.7	0.58	npscoef	10000	41.2	17.8	0.43
npsdeptest	1500	69.5	37.0	0.53	npsdeptest	1500	69.5	26.4	0.38
npsigtest	1000	54.5	43.6	0.80	npsigtest	1000	54.5	46.2	0.85
npsymtest	2500	37.4	20.4	0.55	npsymtest	2500	37.4	14.3	0.38
npudensls	10000	80.3	42.0	0.52	npudensls	10000	80.3	28.4	0.35
npudensml	10000	39.8	21.0	0.53	npudensml	10000	39.8	14.2	0.36
npudistcdf	10000	113.6	64.4	0.57	npudistcdf	10000	113.6	86.2	0.76
npunitest	5000	146.4	76.7	0.52	npunitest	5000	146.4	52.2	0.36

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Function	n	Secs(1)	Secs(4)	Ratio
npcdensls	1000	457.2	125.5	0.27
npcdensml	2500	35.2	9.4	0.27
npcdistls	2000	82.9	28.4	0.34
npcmstest	616	9.8	3.8	0.38
npconmode	189	8.7	3.5	0.41
npcopula	5000	5.0	2.4	0.48
npdeneqtest	2500	33.6	9.2	0.27
npdeptest	2500	41.5	11.2	0.27
npglpreg	1000	282.7	118.3	0.42
npindexich	5000	18.1	5.3	0.29
npindexks	5000	24.1	7.0	0.29
npplreg	1000	9.8	3.4	0.35
npqreg	1008	26.2	9.8	0.38
npregiv	2500	135.4	94.2	0.70
npreglcaic	5000	153.4	40.3	0.26
npreglcls	5000	152.3	39.6	0.26
npregllaic	5000	94.5	39.5	0.42
npregllls	5000	92.3	38.5	0.42
npscoef	10000	41.2	15.2	0.37
npsdeptest	1500	69.5	21.0	0.30
npsigtest	1000	54.5	37.4	0.69
npsymtest	2500	37.4	11.1	0.30
npudensls	10000	80.3	21.3	0.27
npudensml	10000	39.8	10.8	0.27
npudistcdf	10000	113.6	72.7	0.64
npunitest	5000	146.4	39.6	0.27