Strong Scaling Multi-core

| Records | Cores | T msec | Accuracy | Speedup | Efficiency |
| --- | --- | --- | --- | --- | --- |
| 30,000 | Seq | 38612 | 93.584 |  |  |
|  | 1 | 38786 | 93.584 | 0.9955 | 0.9955 |
|  | 2 | 20662 | 93.584 | 1.8687 | 0.9344 |
|  | 3 | 14321 | 93.584 | 2.6962 | 0.8987 |
|  | 4 | 11548 | 93.584 | 3.3436 | 0.8359 |
|  | 5 | 9758 | 93.584 | 3.9570 | 0.7914 |
|  | 6 | 9395 | 93.584 | 4.1098 | 0.6850 |
|  | 7 | 8513 | 93.584 | 4.5357 | 0.6480 |
|  | 8 | 7392 | 93.584 | 5.2235 | 0.6529 |
| 50,000 | Seq | 64603 | 94.199 |  |  |
|  | 1 | 64784 | 94.199 | 0.9972 | 0.9972 |
|  | 2 | 33006 | 94.199 | 1.9573 | 0.9787 |
|  | 3 | 24278 | 94.199 | 2.6610 | 0.8870 |
|  | 4 | 22240 | 94.199 | 2.9048 | 0.7262 |
|  | 5 | 16363 | 94.199 | 3.9481 | 0.7896 |
|  | 6 | 14727 | 94.199 | 4.3867 | 0.7311 |
|  | 7 | 13427 | 94.199 | 4.8114 | 0.6873 |
|  | 8 | 12459 | 94.199 | 5.1852 | 0.6482 |
| 75,000 | Seq | 98276 | 93.864 |  |  |
|  | 1 | 98015 | 93.864 | 1.0027 | 1.0027 |
|  | 2 | 52262 | 93.864 | 1.8804 | 0.9402 |
|  | 3 | 35736 | 93.864 | 2.7501 | 0.9167 |
|  | 4 | 27894 | 93.864 | 3.5232 | 0.8808 |
|  | 5 | 27482 | 93.864 | 3.5760 | 0.7152 |
|  | 6 | 20835 | 93.864 | 4.7169 | 0.7861 |
|  | 7 | 17785 | 93.864 | 5.5258 | 0.7894 |
|  | 8 | 17219 | 93.864 | 5.7074 | 0.7134 |
| 100,000 | Seq | 132983 | 93.913 |  |  |
|  | 1 | 132542 | 93.913 | 1.0033 | 1.0033 |
|  | 2 | 68394 | 93.913 | 1.9444 | 0.9722 |
|  | 3 | 47581 | 93.913 | 2.7949 | 0.9316 |
|  | 4 | 39115 | 93.913 | 3.3998 | 0.8499 |
|  | 5 | 31743 | 93.913 | 4.1894 | 0.8379 |
|  | 6 | 29698 | 93.913 | 4.4778 | 0.7463 |
|  | 7 | 25653 | 93.913 | 5.1839 | 0.7406 |
|  | 8 | 22831 | 93.913 | 5.8247 | 0.7281 |
| 200,000 | Seq | 259891 | 93.744 |  |  |
|  | 1 | 259533 | 93.744 | 1.0014 | 1.0014 |
|  | 2 | 132759 | 93.744 | 1.9576 | 0.9788 |
|  | 3 | 94492 | 93.744 | 2.7504 | 0.9168 |
|  | 4 | 76079 | 93.744 | 3.4161 | 0.8540 |
|  | 5 | 61960 | 93.744 | 4.1945 | 0.8389 |
|  | 6 | 54107 | 93.744 | 4.8033 | 0.8005 |
|  | 7 | 47914 | 93.744 | 5.4241 | 0.7749 |
|  | 8 | 44620 | 93.744 | 5.8245 | 0.7281 |

Strong Scaling Multi-node

| Records | Workers | T msec | Accuracy | Speedup | Efficiency |
| --- | --- | --- | --- | --- | --- |
| 30,000 | Seq | 28972 | 94.278 |  |  |
|  | 1 | 29039 | 94.278 | 0.9977 | 0.9977 |
|  | 2 | 15642 | 94.086 | 1.8522 | 0.9261 |
|  | 3 | 12547 | 92.100 | 2.3091 | 0.7697 |
|  | 4 | 11655 | 94.031 | 2.4858 | 0.6215 |
|  | 5 | 8803 | 93.211 | 3.2912 | 0.6582 |
|  | 6 | 8494 | 93.472 | 3.4109 | 0.5685 |
|  | 7 | 7645 | 93.887 | 3.7897 | 0.5414 |
|  | 8 | 7611 | 92.925 | 3.8066 | 0.4758 |
| 50,000 | Seq | 48882 | 93.507 |  |  |
|  | 1 | 49058 | 93.507 | 0.9964 | 0.9964 |
|  | 2 | 26406 | 93.650 | 1.8512 | 0.9256 |
|  | 3 | 18282 | 92.293 | 2.6738 | 0.8913 |
|  | 4 | 14811 | 93.982 | 3.3004 | 0.8251 |
|  | 5 | 13950 | 93.644 | 3.5041 | 0.7008 |
|  | 6 | 12954 | 93.450 | 3.7735 | 0.6289 |
|  | 7 | 7545 | 93.344 | 6.4787 | 0.9255 |
|  | 8 | 9755 | 93.170 | 5.0110 | 0.6264 |
| 75,000 | Seq | 75692 | 91.827 |  |  |
|  | 1 | 75746 | 91.827 | 0.9993 | 0.9993 |
|  | 2 | 37761 | 92.621 | 2.0045 | 1.0023 |
|  | 3 | 26769 | 93.152 | 2.8276 | 0.9425 |
|  | 4 | 23610 | 93.874 | 3.2059 | 0.8015 |
|  | 5 | 16816 | 93.111 | 4.5012 | 0.9002 |
|  | 6 | 15370 | 93.308 | 4.9247 | 0.8208 |
|  | 7 | 16654 | 93.717 | 4.5450 | 0.6493 |
|  | 8 | 15105 | 93.079 | 5.0111 | 0.6264 |
| 100,000 | Seq | 88290 | 93.345 |  |  |
|  | 1 | 88037 | 93.345 | 1.0029 | 1.0029 |
|  | 2 | 51384 | 92.962 | 1.7182 | 0.8591 |
|  | 3 | 35328 | 93.294 | 2.4992 | 0.8331 |
|  | 4 | 30375 | 93.834 | 2.9067 | 0.7267 |
|  | 5 | 27204 | 93.348 | 3.2455 | 0.6491 |
|  | 6 | 19429 | 93.065 | 4.5442 | 0.7574 |
|  | 7 | 18598 | 93.729 | 4.7473 | 0.6782 |
|  | 8 | 16565 | 93.337 | 5.3299 | 0.6662 |
| 200,000 | Seq | 179828 | 92.799 |  |  |
|  | 1 | 179243 | 92.799 | 1.0033 | 1.0033 |
|  | 2 | 95628 | 92.674 | 1.8805 | 0.9402 |
|  | 3 | 66983 | 91.938 | 2.6847 | 0.8949 |
|  | 4 | 50253 | 93.322 | 3.5785 | 0.8946 |
|  | 5 | 43535 | 92.802 | 4.1307 | 0.8261 |
|  | 6 | 38787 | 93.318 | 4.6363 | 0.7727 |
|  | 7 | 31036 | 93.158 | 5.7942 | 0.8277 |
|  | 8 | 29632 | 93.516 | 6.0687 | 0.7586 |

Weak Scaling Multi-core

| Records | Amount of Data | Cores | T msec | Accuracy | Sizeup | Efficiency |
| --- | --- | --- | --- | --- | --- | --- |
| 15,000 |  | Seq | 15402 | 94.033 |  |  |
|  | x1 | 1 | 15675 | 94.033 | 0.9826 | 0.9826 |
|  | x2 | 2 | 20690 | 93.584 | 1.4888 | 0.7444 |
|  | x3 | 3 | 22615 | 93.855 | 2.0432 | 0.6811 |
|  | x4 | 4 | 22402 | 94.540 | 4.0380 | 1.0095 |
|  | x5 | 5 | 26394 | 93.864 | 2.9177 | 0.5835 |
|  | x6 | 6 | 24294 | 93.855 | 3.8039 | 0.6340 |
|  | x7 | 7 | 26533 | 93.898 | 4.0634 | 0.5805 |
|  | x8 | 8 | 26731 | 93.641 | 4.6095 | 0.5762 |
| 30,000 |  | Seq | 38324 | 93.584 |  |  |
|  | x1 | 1 | 38484 | 93.584 | 0.9958 | 0.9958 |
|  | x2 | 2 | 40856 | 94.309 | 1.8761 | 0.9380 |
|  | x3 | 3 | 47583 | 93.641 | 2.4162 | 0.8054 |
|  | x4 | 4 | 44862 | 94.309 | 4.2426 | 1.0607 |
|  | x5 | 5 | 44676 | 93.754 | 4.2891 | 0.8578 |
|  | x6 | 6 | 45770 | 93.591 | 5.0239 | 0.8373 |
|  | x7 | 7 | 48150 | 93.750 | 5.5715 | 0.7959 |
|  | x8 | 8 | 48716 | 93.754 | 6.2935 | 0.7867 |
| 50,000 |  | Seq | 63804 | 94.199 |  |  |
|  | x1 | 1 | 63719 | 94.199 | 1.0013 | 1.0013 |
|  | x2 | 2 | 67521 | 93.913 | 1.8899 | 0.9450 |
|  | x3 | 3 | 67951 | 93.754 | 2.8169 | 0.9390 |
|  | x4 | 4 | 74940 | 93.744 | 3.6270 | 0.9067 |
|  | x5 | 5 | 76833 | 93.323 | 4.1521 | 0.8304 |
|  | x6 | 6 | 78302 | 92.968 | 4.8891 | 0.8148 |
|  | x7 | 7 | 78485 | 93.356 | 5.6906 | 0.8129 |
|  | x8 | 8 | 79173 | 93.272 | 6.4470 | 0.8059 |
| 75,000 |  | Seq | 98438 | 93.864 |  |  |
|  | x1 | 1 | 98305 | 93.864 | 1.0014 | 1.0014 |
|  | x2 | 2 | 98041 | 93.754 | 2.0081 | 1.0040 |
|  | x3 | 3 | 102926 | 93.785 | 2.8692 | 0.9564 |
|  | x4 | 4 | 110679 | 92.968 | 3.7198 | 0.9300 |
|  | x5 | 5 | 109692 | 93.270 | 4.4870 | 0.8974 |
|  | x6 | 6 | 113612 | 93.218 | 5.1986 | 0.8664 |
|  | x7 | 7 | 115171 | 93.169 | 5.9830 | 0.8547 |
|  | x8 | 8 | 120002 | 93.168 | 6.5624 | 0.8203 |
| 100,000 |  | Seq | 125990 | 93.913 |  |  |
|  | x1 | 1 | 125807 | 93.913 | 1.0015 | 1.0015 |
|  | x2 | 2 | 134653 | 93.744 | 1.8713 | 0.9357 |
|  | x3 | 3 | 141912 | 92.968 | 2.6634 | 0.8878 |
|  | x4 | 4 | 144272 | 93.272 | 3.9346 | 0.9836 |
|  | x5 | 5 | 145942 | 93.174 | 4.3164 | 0.8633 |
|  | x6 | 6 | 150268 | 93.168 | 5.0306 | 0.8384 |
|  | x7 | 7 | 153804 | 93.009 | 5.7341 | 0.8192 |
|  | x8 | 8 | 158211 | 93.002 | 6.3707 | 0.7963 |

Weak Scaling Multi-node

| Records | Amount of Data | Workers | T msec | Accuracy | Sizeup | Efficiency |
| --- | --- | --- | --- | --- | --- | --- |
| 25,000 |  | Seq | 28568 | 93.387 |  |  |
|  | x1 | 1 | 28906 | 93.387 | 0.9883 | 0.9883 |
|  | x2 | 2 | 26793 | 93.419 | 2.1577 | 1.0789 |
|  | x3 | 3 | 30348 | 93.584 | 2.6486 | 0.8829 |
|  | x4 | 4 | 29952 | 93.403 | 4.0529 | 1.0132 |
|  | x5 | 5 | 32246 | 93.275 | 4.6443 | 0.9289 |
|  | x6 | 6 | 32058 | 93.466 | 6.0352 | 1.0059 |
|  | x7 | 7 | 28062 | 93.209 | 7.9968 | 1.1424 |
|  | x8 | 8 | 27570 | 93.261 | 8.1428 | 1.0178 |
| 50,000 |  | Seq | 46793 | 93.670 |  |  |
|  | x1 | 1 | 46964 | 93.670 | 0.9964 | 0.9964 |
|  | x2 | 2 | 55050 | 92.942 | 1.7062 | 0.8531 |
|  | x3 | 3 | 51582 | 92.588 | 3.2017 | 1.0672 |
|  | x4 | 4 | 51522 | 92.881 | 4.0047 | 1.0012 |
|  | x5 | 5 | 52049 | 93.148 | 4.9494 | 0.9899 |
|  | x6 | 6 | 52391 | 92.600 | 5.9608 | 0.9935 |
|  | x7 | 7 | 53376 | 92.976 | 6.8708 | 0.9815 |
|  | x8 | 8 | 53342 | 92.939 | 8.0051 | 1.0006 |
| 100,000 |  | Seq | 86291 | 94.134 |  |  |
|  | x1 | 1 | 86348 | 94.134 | 0.9993 | 0.9993 |
|  | x2 | 2 | 89994 | 93.673 | 1.9190 | 0.9595 |
|  | x3 | 3 | 97665 | 93.153 | 2.7644 | 0.9215 |
|  | x4 | 4 | 98436 | 92.629 | 3.9687 | 0.9922 |
|  | x5 | 5 | 102178 | 92.965 | 4.8169 | 0.9634 |
|  | x6 | 6 | 100589 | 93.209 | 6.0948 | 1.0158 |
|  | x7 | 7 | 102744 | 93.298 | 6.8532 | 0.9790 |
|  | x8 | 8 | 103819 | 93.090 | 7.9172 | 0.9896 |
| 150,000 |  | Seq | 131592 | 93.334 |  |  |
|  | x1 | 1 | 131428 | 93.334 | 1.0012 | 1.0012 |
|  | x2 | 2 | 144903 | 92.788 | 1.8140 | 0.9070 |
|  | x3 | 3 | 145440 | 93.355 | 2.9889 | 0.9963 |
|  | x4 | 4 | 149426 | 92.427 | 3.8933 | 0.9733 |
|  | x5 | 5 | 147138 | 93.058 | 5.0778 | 1.0156 |
|  | x6 | 6 | 152049 | 93.043 | 5.8062 | 0.9677 |
|  | x7 | 7 | 151443 | 93.043 | 7.0280 | 1.0040 |
|  | x8 | 8 | 150240 | 92.815 | 8.0641 | 1.0080 |
| 200,000 |  | Seq | 165862 | 93.323 |  |  |
|  | x1 | 1 | 165546 | 93.323 | 1.0019 | 1.0019 |
|  | x2 | 2 | 169329 | 93.830 | 1.9553 | 0.9777 |
|  | x3 | 3 | 188334 | 93.075 | 2.6973 | 0.8991 |
|  | x4 | 4 | 193105 | 92.660 | 3.9012 | 0.9753 |
|  | x5 | 5 | 191880 | 92.949 | 5.0319 | 1.0064 |
|  | x6 | 6 | 191667 | 92.546 | 6.0067 | 1.0011 |
|  | x7 | 7 | 194444 | 92.951 | 6.9000 | 0.9857 |
|  | x8 | 8 | 195472 | 92.807 | 7.9579 | 0.9947 |