Errata Pages for *Parallel Computing: Theory and Practice*, First Printing

Page 12, line –7: Change "on the execution time" to "on the speedup"

Page 21, line –9: Delete the sentence "(Hint: Processors do not have to receive the message elements in order.)"

Page 23, line 1: Mark Problem 1–14 with an asterisk

Page 23, line 8: Change "smallest value of λ" to "smallest value of λ (relative to χ)"

Page 23, line 18: Insert "$n = 1,000,000$ and" before "$\lambda = 100\chi$"

Page 25, line –3: Change "optimal-sequential" to "optimal sequential"

Page 26, line –4: Change "overall" to "over all"

Page 28, line –17: Change "EREW" to "CREW"

Page 31, line 2: Delete "{"

Page 32, Figure 2–6: $A[8]$ should contain "9" in rows 3 and 4

Page 34, Figure 2–10 caption: Change "an EREW" to "a CREW"

Page 37, Figure 2–13: In part (d) of figure, the boxes with labels (A, B), (B, D), (B, E), (E, G), (E, H), and (A, C) should be bold. The box with label (F, C) should be relabeled (C, F) and should be bold.

Page 38, line 3: Change "stores, the" to "stores the"

Page 39, Figure 2–15, line 6: Change "$succ[1 \ldots (n-1)]$" to "$succ[1 \ldots 2(n-1)]$"

Page 39, Figure 2–15, line 7: Change "$position[1 \ldots (n-1)]$" to "$position[1 \ldots 2(n-1)]$"

Page 39, Figure 2–15, lines 10 and 11: Change "$P(i,j)$" to "$P(i,j)$ and $P(j,i)$"

Page 39, Figure 2–15, line 27: Change "Number of edges of the successor list" to "Assign position values"

Page 40, line 8: Change "another" to "an"

Page 40, Figure 2–16: Change three occurrences of right curly braces to right square brackets

Page 45, line 13: Change "the the" to "the"

Page 48, line –7: Change "p-memory" to "p memory"

Page 50, line 2: Change "Cook" to "Cook (1985)."

Page 57, line 16: Change "of that size is 2^{k-1}" to "of that size is 2^k"

Page 57, line -2: Change "2^{k-1}, the" to "2^{k-1}. The"

Page 58, line 1: Proper spacing after sentence is missing

Page 61, Section 3.1.10 subheading: Change "Orginization" to "Organization"

Page 67, line 12: Change "permuation" to "permutation"

Page 76, line 11: Change "node, is" to "node is"

Page 112, Figure 4–14, line 12: Change "`(1 << i (i + 1))`" to "`(1 << (i+1))`"

Page 120, Figure 4–19, line 24: Change "" to ""

Page 126, Figure 4–25: Insert "p {Number of processors}" between lines 2 and 3

Page 126, Figure 4–25, line 11: Change "0" to "i"

Page 127, Figure 4–26: Change "0 to $n-1$" to "i to $intervals-1$"

Page 128: Delete all but last word of first line of text

Page 128, line 16: Change "Bannerjee" to "Banerjee"

Page 133, Figure 5–1 caption: Change "a algorithm" to "an algorithm"

Page 134, line 13: Change "Prob. 5–1" to "Prob. 5–2"

Page 136, Theorem 5.2: Change "$\lceil n/2 \rceil$" to "$2^{\lceil n/2 \rceil - 1}$"

Page 137, Theorem 5.4: Change "$\lceil n/2 \rceil$" to "$2^{\lceil n/2 \rceil}$"

Page 137, Theorem 5.6: Change "hypercube with n nodes" to "hypercube with n dimensions"

Page 138, Figure 5–10 caption: Change "n nodes" to "n dimensions"

Page 138, lines 4 and 6: Change "k" to "n"

Page 138, line 11: Change "tree with of height" to "tree of height"

Page 145, Figure 5–16: Change "3–8" to "5–15"

Page 147, line 15: Change "R" to "Let R"

Page 147, lines 16–18: Change "lexicographically smaller than $N(T)$ for all T in R" to "lexicographically smallest among all $N(T)$ in R"

Page 148, Figure 5–18, line 4: Change "trying" to "tying"

Page 148, Figure 5–18, line 7: Change "Task T_8 is lexicographically smallest. Choose it" to "Set $N(T_8)$ is lexicographically smallest. Choose task T_8"

Page 148, Figure 5–18, line 10: Change "Tasks T_3, T_4, and T_5" to "Sets $N(T_3)$, $N(T_4)$, and $N(T_5)$"

Page 148, Figure 5–18, line 12–13: Change "Tasks T_3 and T_5" to "Sets $N(T_3)$ and $N(T_5)$"

Page 149, line –5: Change "jdepth" to "depth"

Page 149, Figure 5–19(a): Remove arrow between tasks T2 and T4

Page 150, line 4: Change "snchronize" to "synchronize"

Page 153, line 8: Change "neverthess" to "nevertheless"

Page 153, line -16: Change "emedding" to "embedding"

Page 160, line 10: Change "signficant" to "significant"

Page 160, line -12: Change "$\log n$" to "$\log p$"

Page 165, Figure 6–5: Top bubble in leftmost column should contain "6"

Page 165, line 9: Delete phrase "for a model"

Page 166, line 6: Change "*mono*" to "*partial*"

Page 168, Figure 6–8, line 7: Change "*local.sum*" to "*local.sum, j*"

Page 169, Figure 6–9 caption: Change "UMA MIMD" to "UMA multiprocessor" and change "adds" to "add"

Page 171, Figure 6–12, line 11: Add comment "{ $\otimes$ is exclusive or operator }"

Page 180, line 2: Change "$\Theta(n)$" to "$\Omega(n)$"

Page 180, Figure 7–2 (a): Change "$c_{i,v}$" to "$c_{i,j}$"

Page 183, line -1: Change "1978" to "1981"

Page 188, Figure 7-10: Change "for $j \leftarrow i$ to n" to "for $j \leftarrow 1$ to n"

Page 192, Figure 7-14, line -3: Change "$b[0 \ldots (n-1) \Leftarrow$" to "$b(0 \ldots (n-1)] \Leftarrow$"

Page 193, line 18: Change "speedup" to "scaled speedup"

Page 195, line -9: Change "Figure 7-16 illustrates the speedup" to "Figure 7-16 illustrates the scaled speedup"

Page 195, line -7: Change "algorithms" to "algorithm"

Page 209, Figure 8-6 caption: Change "y_2" to "y_1"

Page 212, Figure 8-8b: Change the three sequential for loop indices from "*i*" to "*j*" and also change the subscripted variables inside these loops from "*i*" to "*j*"

Page 220: Replace Definition 9.8 with the following:

Definition 9.8. A symmetric $n \times n$ matrix **A** is **positive definite** if for every nonzero vector x and its transpose x^T, the product $x^T Ax > 0$.

For example, all symmetric, diagonally dominant matrices with positive diagonal elements are positive definite.

Page 231, Figure 9–13, line 14: Change "$j \leftarrow i$" to "$j \leftarrow 1$"

Page 231, Figure 9–13, line -5: Change "N" to "n"

Page 234, Figure 9–16: Declare local variable $tmp.vector[1 \ldots (n+1)]$

Page 234, Figure 9–16, line -15: Change "$j \leftarrow i$" to "$j \leftarrow 1$"

Page 234, line –5: Change "$i + 1$" to "i"

Page 235, Figure 9–17, line 2: Change "$tmp.vector[(i+1)..(n+1)]$" to "$tmp.vector[i..(n+1)]$"

Page 235, Figure 9–17, line 5: Change "marked[j]" to "$marked[j]$"

Page 236, Figure 9–18: Declare local variables $tmp.value$ and $tmp.winner$

Page 236, line -10: Change "$i + 1$ through n" to "i through n"

Page 236, line -7: Change "$n - i$" to "$n - i + 1$"

Page 238, Equation 9.24: Insert "=" between "$x_i(t+1)$" and "$\frac{1}{a_{i,i}}$"

Page 242: Figure 9-23, line 7: Change "$newx[0 \ldots n+1][0 \ldots n+1]$" to "$newx[0 \ldots (n+1)][0 \ldots (n+1)]$"

Page 244, Equation 9.31: Insert "=" between "$x_i(t+1)$" and "$\frac{1}{a_{i,i}}$"

Page 244, Equation 9.32: Insert "=" between "$x_i(t+1)$" and "$\frac{1}{a_{i,i}}$"

Page 245, line –9: Change "sets, is called" to "sets, which is called"

Page 248, line –2: Change ", both are" to "are both"

Page 250, line –11: Change "$numerator/denominator$" to "$num1/denom1$"

Page 252, line 15: Change "(1990)," to "(1990);"

Page 253, line 13: Change "(1987);" to "(1987)."

Page 253, line 24: Change "(1987)," to "(1987);"

Page 253, line 26: Change "itertive" to "iterative"

Page 253, line -4: Change "$\Theta(n)$" to "$\Theta(\log n)$"

Page 253, line -3: Change "$\Theta(n/\log p)$" to "$\Theta(n/\log n)$"

Page 255, Introductory quotation: Change "intricasies" to "intricacies"

Page 256, line -21: Change "perform an the" to "perform the"

Page 257, Figure 10-1 caption: Change "in where" to "in which"

Page 258, line -18: Change "to be sorted" to "to be sorted, where n is even"

Page 265, Figure 10-11 caption: Change "mergesort" to "merge-sort"

Page 265, line 3: Change "found, by" to "found by"

Page 270, line -2: Change "mapping that lists elements" to "mapping list elements"

Page 274, line 4: Change "there are more processes to be sorted than arrays" to "there are more processes than unsorted subarrays"

Page 278, line 4: Change "in lower" to "in the lower"

Page 281, line -6: Change "processor's" to "processors'"

Page 286, line –2: Change "$\underline{[}i]$" to "$b[i]$"

Page 288, Figure 10-32 caption: Change "from the processor 19" to "from the perspecive of processor 19"

Page 288, line -12: Change "n" to "n^2"

Page 289, Figure 10-33 caption, line 4: Change "P_a" to "A_d"

Page 290, line –13: Change "Valient" to "Valiant"

Page 299, Figure 11–3: In parts (a) and (d) there should be a left-pointing arrow leaving the node labeled "6"

Page 299, line -3: Change "alpha" to "α"

Page 302, line 21: Change "a lock that can be set by a delete process" to "a lock that can be set by any process"

Page 305, line -8: Change "node u" to "node v"

Page 305, line -1: Change "u" to "v"

Page 305, Figure 11-7: On both sides of the figure the right child of node v should be labeled t

Page 307, line 23: Change "rotations require" to "rotations that require"

Page 314: Figure 12–2: In the "connect supervex roots" phase of iteration 2, vertex 5 should point to vertex 2, not vertex 7

Page 315, line 8: Change "two-dimensional processors mesh" to "two-dimensional mesh"

Page 315, line -3: Change "$d + i + 1$" to "$d_i + 1$"

Page 316, Figure 12-3 caption: "adaption" should be "adaptation"

Page 324, line 4: Change "In contiguous" to "In a contiguous"

Page 325, Figure 12-11 caption: Change "sorting" to "storing"

Page 331, Figure 12-18: Change "for $l \leftarrow d - 1$ downto 0 do" to "for $l \leftarrow d$ downto 1 do"

Page 350, Figure 13-12 caption: Change "asynchonrous" to "asynchronous"

Page 353, line 2: Change "in the Theorem 13.1" to "in Theorem 13.1"

Page 353, Theorem 13.2: Change "(1984)" to "[1984]"

Page 359, line 4: Change "$(v - e, v - e)$" to "$(v - e, v + e)$"

Page 359, line 2: Delete the entire line "error ... probable"

Page 360, line -7: Change "$b^{\lceil (d-1)/2 \rceil} + b^{\lfloor (d-1)/2 \rfloor} - 1$" to "$b^{\lceil d/2 \rceil} + b^{\lfloor d/2 \rfloor} - 1$"

Page 362, line 19: Change "to the parent" to "to its parent"

Page 382, definition of Load: Change "G''" to "G'"

Page 384: Change the definition of "Positive Definite" to "Refers to a symmetric $n \times n$ matrix $\mathbf{A}$ having the property that for every nonzero vector x and its transpose x^T, the product $x^T Ax > 0$."

Page 385, definition of Shuffle-Exchange Network: Delete comma after "labeled"

Page 386, definition of Suffix Sums: Change "a_l" to "a_n"

Page 415: Insert the following reference: "Lam, S., and Sethi, R. 1977. Worst case analysis of two scheduling algorithms. *SIAM Journal on Computing*, vol. 6, no. 3 (September), pp. 518–536.

Page 431, line 25: Change "1985" to "1989"

Page 431: Insert the following reference: "von zur Gathen, J. 1986. Parallel arithmetic computations: A survey. In *Proceedings of the 12th Symposium on Mathematical Foundations of Computer Science, Lecture Notes in Computer Science 233*, J. Grunska, B. Rovan, and J. Wiedermann, eds., Springer-Verlag, pp. 93–112."