```
**for each** internal node with index $i \in [0, n-2]$ **in parallel**
    // Determine direction of the range (+1 or -1)
    $d \leftarrow \mathrm{sign}(\delta(i, i+1) - \delta(i, i-1))$
    // Compute upper bound for the length of the range
    $\delta_{\min} \leftarrow \delta(i, i-d)$
    $l_{\max} \leftarrow 2$
    **while** $\delta(i, i + l_{\max} \cdot d) > \delta_{\min}$ **do**
        $l_{\max} \leftarrow l_{\max} \cdot 2$
    // Find the other end using binary search
    $l \leftarrow 0$
    **for** $t \leftarrow \{l_{\max}/2, l_{\max}/4, \ldots, 1\}$ **do**
        **if** $\delta(i, i + (l+t) \cdot d) > \delta_{\min}$ **then**
            $l \leftarrow l + t$
    $j \leftarrow i + l \cdot d$
    // Find the split position using binary search
    $\delta_{\mathrm{node}} \leftarrow \delta(i, j)$
    $s \leftarrow 0$
    **for** $t \leftarrow \{\lceil l/2 \rceil, \lceil l/4 \rceil, \ldots, 1\}$ **do**
        **if** $\delta(i, i + (s+t) \cdot d) > \delta_{\mathrm{node}}$ **then**
            $s \leftarrow s + t$
    $\gamma \leftarrow i + s \cdot d + \min(d, 0)$
    // Output child pointers
    **if** $\min(i, j) = \gamma$ **then** left $\leftarrow L_{\gamma}$ **else** left $\leftarrow I_{\gamma}$
    **if** $\max(i, j) = \gamma + 1$ **then** right $\leftarrow L_{\gamma+1}$ **else** right $\leftarrow I_{\gamma+1}$
    $I_i \leftarrow (\mathrm{left}, \mathrm{right})$
**end for**
```