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Algorithm 1 LAMB: Long-Term Auction for Mobile
                                                                        Blockchain
                                                                         Input: The number of rounds T buyers M, sellers N and subtasks K, the bid of buyers v_{ij}^{(t)}, r_i^{(t)} and of sellers o_j^{(t)},
                                                                         p_j^{(t)}, c_j^{(t)}, e_j^{(t)}, w_j^{(t)} Output: The charges for buyers G and the payments to
                                                                                 sellers P
                                                                           1: for t \leftarrow 1 to T do 2: X_{N*M}^{(t)} \leftarrow \emptyset;
                                                                                        for i \leftarrow 1 to N do
                                                                           3:
                                                                                               \begin{array}{c} \mathbf{for} \ j \leftarrow 1 \ \mathrm{to} \ \mathbf{\mathit{M}} \ \mathbf{do} \\ \hat{p}_{ij}^{(t)} \leftarrow v_{ij}^{(t)} / \sum_{\lambda=1}^{\Lambda} l_{i^{\lambda}}^{(t)} \end{array}
                                                                           4:
                                                                                                                                                                  Unit price of buyers' resources
                                                                                        end for:
                                                                                        D^{(t)} \leftarrow \emptyset;
                                                                                        for i \leftarrow 1 to N do
                                                                           9:
                                                                                               \begin{aligned} & \mathbf{for} \ j \leftarrow 1 \ \mathrm{to} \ \boldsymbol{M} \ \mathbf{do} \\ & d_{ij}^{(t)} \leftarrow \hat{p}_{ij}^{(t)} - p_{j}^{(t)}; \\ & D^{(t)} \leftarrow D^{(t)} \cup d_{ij}^{(t)} \end{aligned}
                                                                         10:
                                                                                                                                                                 - Unit price diff. between buyer and seller
                                                                         11:
                                                                         12:
                                                                                                end for:
                                                                         13:
                                                                         14:
                                                                                         end for;
                                                                                        Sort d_{ij}^{(t)} in D^{(t)} in descending order;
                                                                         15:
                                                                                        if max(d_{ij}^{(t)}) < 0 then
                                                                         16:
Sorting & allocation
                                                                         17:
                                                                                        end if;
                                                                         18:
                                                                                        H^{(t)} \leftarrow \emptyset;
                                                                         19:
                                                                                        for \forall d_{ij}^{(t)} \in D^{(t)} do
                                                                         20:
                                                                                               for \lambda^{(t)} \leftarrow 1 to \Lambda^{(t)} do

if l_{i\lambda}^{(t)} < o_{j}^{(t)} and H_{i}^{(t)} + cost^{(t)} < v_{ij}^{(t)}
                                                                         21:
                                                                         22:
                                                                                 and B_i > 0 then
                                                                                                              o_j^{(t)} \leftarrow o_j^{(t)} - r_{i_k}^{(t)};
D_i^{(t)} \leftarrow D_i^{(t)} \cup cost^{(t)};
                                                                         23:
                                                                                                                                                                                                          allocation
                                                                         24:
                                                                         25:
                                                                         26:
                                                                                                              B_i \leftarrow B_i - v_{ii}^{(t)}
                                                                         27:
                                                                                                       end if;
                                                                         28:
                                                                                                end for;
                                                                         29:
                                                                                        end for:
                                                                         30:
                                                                         31: end for;
                                                                         32: P \leftarrow \emptyset;
                                                                         33: for s_{j} \in S do
34: p_{j} \leftarrow \sum_{t=1}^{T} \sum_{j=1}^{N} \sum_{\lambda=1}^{\Lambda} X_{ij}^{(t)} l_{i\lambda}^{(t)} f_{ij}^{(t)};
35: P \leftarrow P \cup p_{j}
                                                                                                                                                                                  charge
     Calculating the
                                                                         36: end for;
                                                                         37: G \leftarrow \emptyset
     payment and charge
                                                                        38: for y_i \in Y do;

39: g_i \leftarrow \sum_{t=1}^{T} \sum_{i=1}^{M} \sum_{k=1}^{K} X_{ij}^{(t)} r_{ik}^{(t)} f_{ij}^{(t)};

40: G \leftarrow G \cup g_j
                                                                                                                                                                               payment
                                                                         41: end for;
                                                                         42: return P, G
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