

**Algorithm 1** Prob-DistanceGraphConstruction(Readers  $R$ , Reader weights  $W$ , Travel time matrix  $TT$ , Transition probability matrix  $P$ )

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1:  $G_{pdm}(V, E, \mathcal{L}_V, \mathcal{L}_E) \leftarrow (R, \emptyset, W, \emptyset)$ 
2: for each reader  $r_i \in R$  do
3:   for each reader  $r_j \in R$  and  $r_j \neq r_i$  do
4:     if  $(r_i, r_j) \in G_{pdm}.E$  then
5:       continue
6:     find the indoor shortest path  $sp$  from  $r_i$  to  $r_j$ 
7:     if there is no other reader on  $sp$  then
8:       add edge  $(r_i, r_j)$  to  $G_{pdm}.E$ 
9:        $G_{pdm}.\mathcal{L}_{(r_i, r_j)} \leftarrow (TT[i][j], P[i][j])$ 
10:    else
11:      for each pair of consecutive readers  $r_k$  and  $r_l$  on  $sp$  do
12:        if  $(r_k, r_l) \in G_{pdm}.E$  then
13:          continue
14:        else
15:          add edge  $(r_k, r_l)$  to  $G_{pdm}.E$ 
16:           $G_{pdm}.\mathcal{L}_{(r_k, r_l)} \leftarrow (TT[k][l], P[k][l])$ 
17: return  $G_{pdm}$ 

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