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**Algorithm 1** iRQ

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1: function iRQ(query point  $q$ , distance  $r$ , indoor index  $\mathcal{T}$ )
2:   result set  $R$ ; candidate object set  $C$ ;
3:    $(R^o, R^p) \leftarrow \text{RangeSearch}(q, r, \mathcal{T});$  // Phase1 : filtering
4:   Dijkstra( $R^p$ ); // Phase 2: subgraph
5:   for each object  $O$  in  $R^o$  do // Phase 3: pruning
6:      $[O.l, O.u] \leftarrow [|q, O|_{\min I}, |q, O|_{\max I}];$  // (Table III)
7:   for each  $O \in R^o$  do
8:     if  $O.u \leq r$  then  $R = R \cup \{O\}$ 
9:     else
10:      if  $O.l \leq r$  then  $C = C \cup \{O\}$ 
11:   for each  $O \in C$  do // Phase 4: refinement
12:     Calculate  $|q, O|_I$ ;
13:     if  $|q, O|_I \leq r$  then  $R = R \cup \{O\}$ ;
14:   return  $R$ .
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