Algorithm 5 PTkISSJ_Join(double M, HashTable $XRegionHT2$, XRegionSet X, Integer k)

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1: ObjectPairSet R(objectID1, objectID2) ← ∅;
2: for each X-region x in X do
3:     RecordSet RR(objectID, tI) ← XRegionHT2[x];
4:     Combine records with same object and adjacent time intervals in RR;
5:     Remove any record if it satisfies tI.t_y − tI.t_x + 1 < k;
6:     if |RR| > 1 then
7:         Sort the records in RR according to its tI.t_x;
8:         for i=0; i<|RR|-1; i++ do
9:             ObjectID o_i ← RR[i].objectID;
10:            for j=i+1; j<|RR|; j++ do
11:                ObjectID o_j ← RR[j].objectID;
12:                if o_i ≠ o_j and (o_i, o_j) ∉ R and |RR[i].tI ∩ RR[j].tI| ≥ k then
13:                    TimeInterval [t_u, t_v] ← RR[i].tI ∩ RR[j].tI;
14:                    Integer count ← 0;
15:                    for t_c=t_u; t_c<t_v; t_c++ do
16:                        if pr(Θ(o_i, x, t_c)) · pr(Θ(o_j, x, t_c)) > M then
17:                            if count = k − 1 then
18:                                R ← R ∪ {(o_i, o_j)};
19:                                break;
20:                            else
21:                                count++;
22:                        else
23:                            if t_v − t_c + 1 ≤ k then
24:                                break;
25:                            count ← 0;
26: return R;
```