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**Algorithm 1.** *room-extraction*

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**Input:** *DXF*: the CAD model.

**Output:** *P*: the set of extracted rooms.

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1:  $RL \leftarrow$  lines (DXF); // extract line set from DXF
2:  $NL \leftarrow$  near-line-clustering(RL); // near-line-based clustering
3:  $L \leftarrow$  simplify (NL); // merging lines in the same cluster into a single one
   /* grow lines to generate polygons */
4: for each line  $l \in L$  do
5: |   grow  $l$  until both end points of  $l$  intersects with another lines in  $L$ ;
6: end for
7:  $P \leftarrow$  get all polygons from  $L$ ; // except the bounding polygon of the floor
   /* remove duplicated polygons */
8:  $M \leftarrow$  Constructing MBRs for each polygon in  $P$ ;
9: for each two MBRs  $m_1, m_2 \in M$  do
10: |   if ( $m_1$  contains  $m_2$ ) and ( $m_1$ 's room has more doors than  $m_2$ 's) then
11: |   |   remove  $m_1$  from  $M$ ;
12: |   |   remove the polygon bounded by  $m_1$  from  $P$ ;
13: |   end
14: end for
15: return  $P$ ;
end room-extraction
```

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