Conditionals for Extreme points orthogonal projections

*k* stands for the new Box EP

*i* stands for preplaced boxes

3 Potential points:

X(*k.x + k.w, k.y, k.z)*

Y(*k.x, k.y + k.h, k.z)*

Z(*k.x, k.y, k.z+ k.d)*

Project each point to its orthogonal axis and check if the projection lies at the side of item *i,* if it can be projected in multiple items then choose the EP that is closest to the Potential point

Conditionals for projecting points:

Xy:

If(X.x >= *i.x* && X.x <= *(i.x+i.w) &&* (X.z >= *i.z* && X.z <= *(i.z+i.d) && (is closer than prev EP in same axis projection ) Correct*

Xz:

If(X.x >= *i.x* && X.x <= *(i.x+i.w) &&* (X.y >= *i.y* && X.y <= *(i.y+i.h) && (is closer than prev EP in same axis projection )*

*Yx:*

If(Y.y >= *i.y* && Y.y <= *(i.y+i.h) &&* (Y.z >= i*.z* && Y.z <= *(i.z+i.d) && (is closer than prev EP in same axis projection )*

Yz:

If(Y.y >= *i.y* && Y.y <= *(i.y+i.h) &&* (Y.x >= *i.x* && Y.x <= *(i.x+i.w) && (is closer than prev EP in same axis projection )*

*Zx:*

If(Z.z >= *i.z* && Z.z <= *(i.z+i.d) &&* (Z.y >= i*.y* && Z.y <= *(i.y+i.h) && (is closer than prev EP in same axis projection )*

*Zy:*

If(Z.z >= *i.z* && Z.z <= *(i.z+i.d) &&* (Z.x>= i*.x* && Z.x <= *(i.x+i.w) && (is closer than prev EP in same axis projection )*