Let $S$ be a finite set of points included in a bounded polygonal domain $D$ of the plane. The order-$k$ nearest influence region of a point in $S$ is the set of points of $D$ having the given point between their $k$-nearest neighbors in $S$.

Let $P$ be a weighted partition of the domain $D$ into polygonal regions with an associated non-negative weight per region. We want to solve the problem of finding a new point $s$.