Answers for theoretical questions in the hole filling problem

1. If there are m boundary pixels and n pixels inside the hole, then the complexity is $O(m \cdot n)$. because for every pixel in the hole we calculate the distance from every pixel in the boundary.
   For a two dimensional figure, in the worst case we get that $m = O(n)$ then the complexity in $O(n^2)$.
2. The algorithm will choose randomly a fixed set of pixels from the boundary, for each pixel in the hole we will calculate the distance only from the fixed set. This will reduce the complexity to $O(n)$.