Practice Problems for Computational Geometry and Image Processing

1. Given a set \(|S| = n\) of planar points, determine the convex hull of \(S\).
2. Given a labeled set \(|S| = n\) of planar points, determine the convex hull of each set of uniquely labeled points.
3. Given a set \(|S| = n\) of planar points, determine the smallest enclosing box of \(S\).
4. Given a labeled set \(|S| = n\) of planar points, determine the smallest enclosing box of each uniquely labeled set of points.
5. Given a set \(|S| = n\) of planar points, solve the all-nearest-neighbor problem.
6. Given an \(n \times n\) digitized image of 1’s and 0’s, determine the convex hull of the set of 1’s.
7. Given an \(n \times n\) digitized image of 1’s and 0’s, label the maximally connected components.
8. Given an \(n \times n\) digitized image of 1’s and 0’s, label the maximally connected components, assuming that the diameter of any maximally connected component is \(\Theta(1)\).