

# Assignment 2: Closest pair\*

csci 3250 Computational Geometry

(a) Consider a set of  $n$  points in the plane. Describe and analyze a divide-and-conquer algorithm to find the closest pair of points in the input. Your algorithm should run in  $O(n \lg n)$  time.

(b) Now assume the set of points is in 3D. Describe and analyze a brute-force algorithm to find the closest pair.

(c) Describe and analyze a divide-and-conquer approach for finding the closest pair of a set of points in 3D (You could describe the whole algorithm, or you could describe only the differences with the algorithm for the 2D case).

For full credit your solution has to be clear, neat, concise, and contain at least an attempt to justify why it is correct.

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\*You are encouraged to work and discuss with a partner, however write your solution individually.