Candidate
Thurs: Research talk: 4:30 in 224
Friday: 9:00 am mock class 202
Friday: 2:35 – 3:30 p.m. Open House with students 75 SHS 2nd Floor East Lounge

Goals:
1. Be able to do self-assessment
2. Determine combine/post-processing step for Closest Points

ClosPt (divide + conquer)

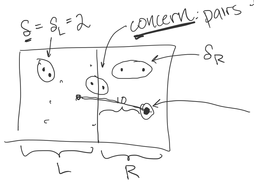
Base case: If $|P| \leq 3$, Do brute force

Divide:

P (details later)

Solve:
$S_L \leftarrow$ ClosPt(L)
$S_R \leftarrow$ ClosPt(R)
$S \leftarrow \min\{S_L, S_R\}$

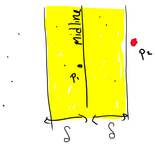
Combine (thought process)



this pt not a concern if $S = 2$, because distance to any pt. in L is too large

What points do we need to worry about? Those with x-coordinates within
A) $S/2$ of midline
B) $\sqrt{S}$ of midline
C) S of midline
D) $2S$ of midline?

[Something fun from the weekend]



Lemma: If p_2 in R is more than S from midline, its distance to any pt. p_1 in L is more than S.

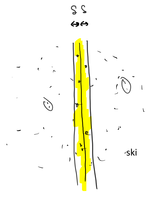
Pf Sketch: $d(p_1,p_2) = \sqrt{(x_1-x_2)^2 + (y_1-y_2)^2}$

But: $(x_1-x_2)^2 > S^2$

$(y_1-y_2)^2 > 0$

$\sqrt{(x_1-x_2)^2 + (y_1-y_2)^2} > S^2 + 0 = \sqrt{S^2}$

Thus $d(p_1,p_2) > S$



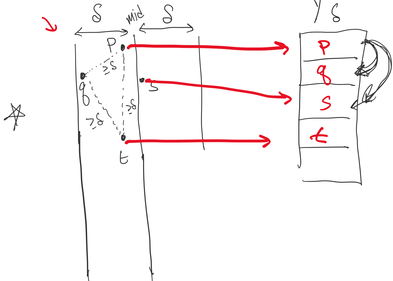
1. Sort
2. Loop and compare each pt to its neighbors.

Combine

$Y_S \leftarrow$ y-sorted list of pts in P with x-coord within δ of midline (details later!)

- For $p \in Y_S$:
  - Check distance from p to next ? pts in Y_S
  - If distance less than δ found, set δ to new dist.

Return δ



Group Question

- How many next pts?