

Timothy Chan's Convex Hull Algorithm (Chan 1995)
 $O(n \lg n)$: combines Graham and Jarvis

Arbitrarily split P into subsets $P_1, \dots, P_{n/h}$ each of size h .

for $k = 1$ to n/h do

$U_k =$ upper bound of P_h (by Graham scan)

$q_1 =$ leftmost point

for $i = 1$ to h do

 {

 if $q_i ==$ rightmost point return $\langle q_1, \dots, q_i \rangle$

$q_{i+1} =$ rightmost point

 for $k = 1$ to n/h do {

$p_k =$ "right tangent" between q_i and U_k

 if p_k above $q_i q_{i+1}$ then $q_{i+1} = p_k$

 }

Method works if estimate for h is too large ... but runtime is $n \lg h$, so we want a decent estimate for $\lg h$. Start with $\lg h = 2$ (ie $h=4$) and run the algorithm doubling estimate of $\lg h$ each time.