Geometric Intersection

Halfplane Intersection Construction

- The Problem

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Halfplane Intersection Construction

❖ [HIC]

Let $H = \{ h_1, \ldots, h_n \}$ be a collection of halfplanes in $\mathcal{E}^2$

How to construct their common intersection (if non-empty)?

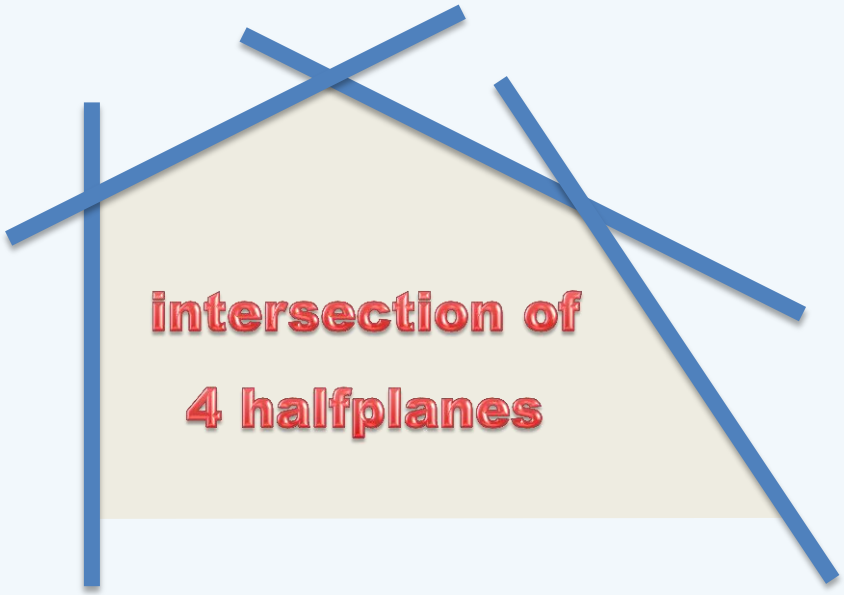
❖ Since each halfplane is convex, we know that

- Their intersection is a convex set

(with $O(n)$ edges along the boundary)

❖ However, note that

- The intersection might be unbounded



Unbounded Convex Polygons

- Can we extend the CPIC algorithms

  (such as Edge-Chasing and Plane-Sweeping)

  to handle **unbounded** convex polygons?

- The answer is yes,

  providing an appropriate modification

  of the **data structures**

- In fact, we will next use

  such an algorithm