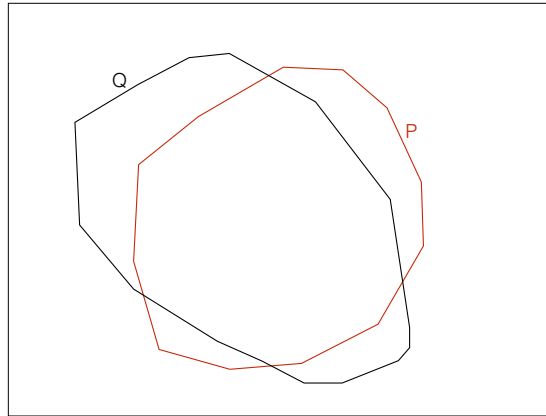


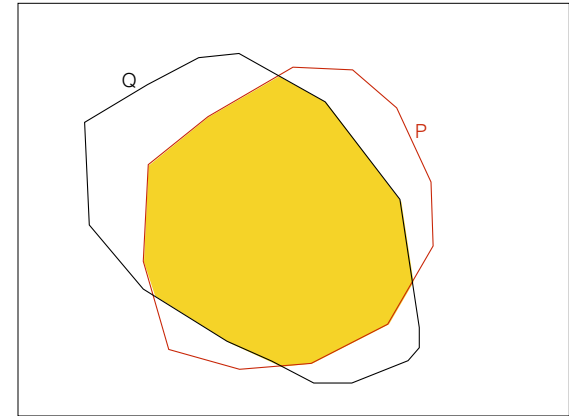
Convex polygon intersection

- The problem: Given two convex polygons, compute their intersection
- Key component in other algorithms, such as
 - computing intersection of half-planes
 - finding the kernel of a polygons
 - linear programming problems

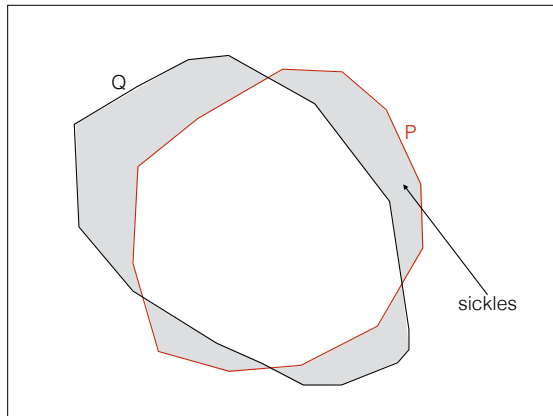
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Convex polygon intersection

- Claim: Intersection of two convex polygons P and Q has complexity $O(|P| + |Q|)$
- Algorithm outline
 - choose edge A on P, B on Q arbitrarily
 - repeat
 - if A intersects B
 - print intersection (and update inside flag)
 - advance A or B
 - until both A and B cycles their polygons

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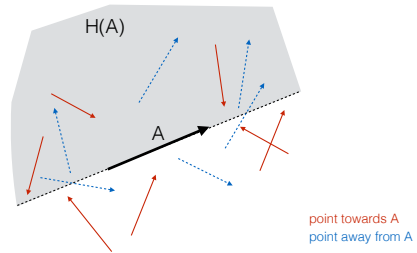
Advancing

- Idea: the edges A and B chase each other, adjusting so that they meet at each intersection

6

Advancing

- A directed edge
- $H(A)$: left half-plane of A

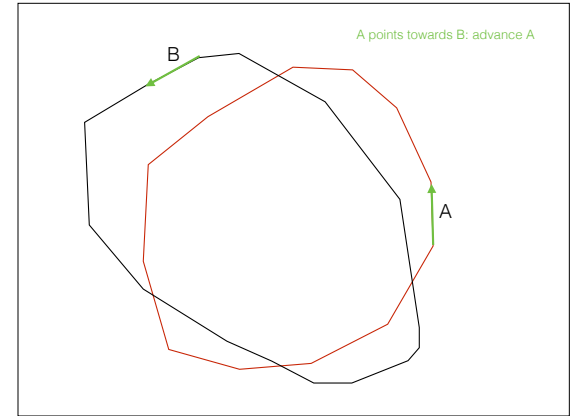


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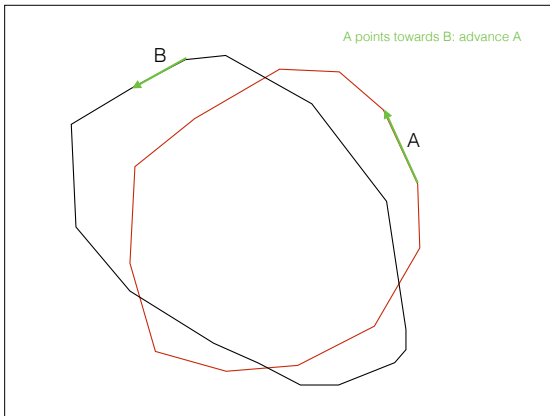
Advancing

- Idea: the edges A and B chase each other, adjusting so that they meet at each intersection
- if both A and B point towards each other
 - advance whichever is outside the other
- if B points towards A and A does not point towards B
 - advance B
- if A points towards B and B does not point towards A
 - advance A
- if neither A and B point towards each other
 - advance whichever is outside the other

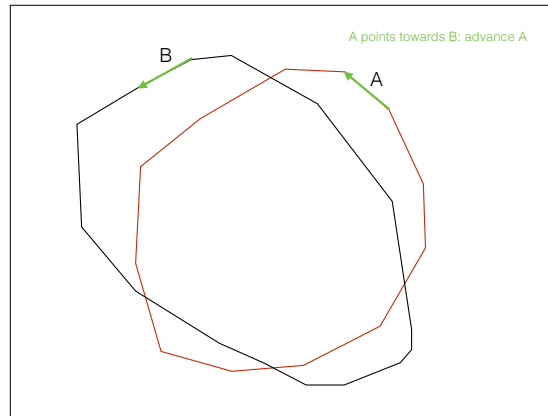
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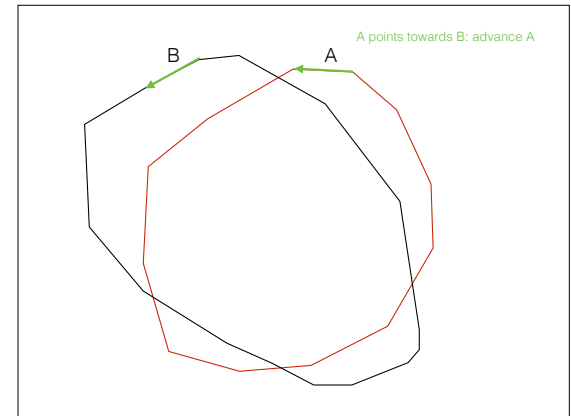
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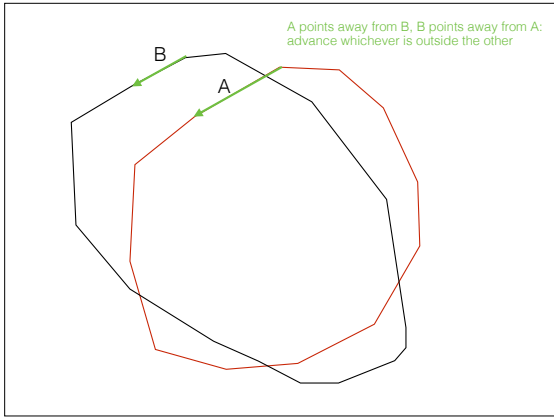
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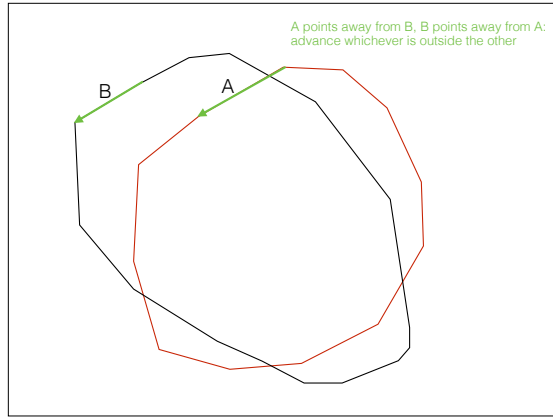
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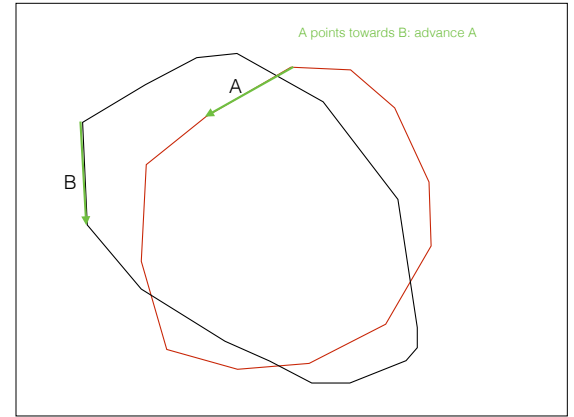
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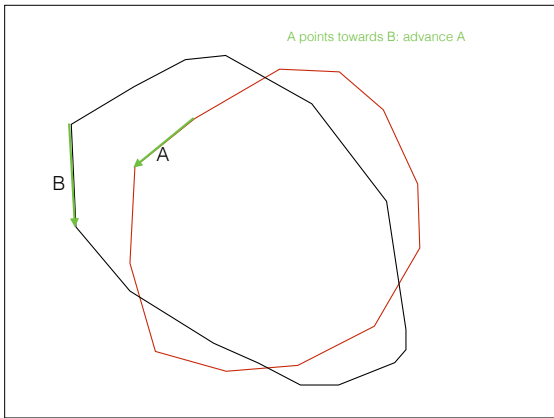
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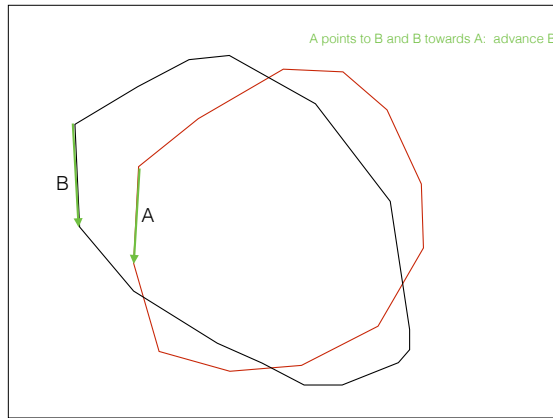
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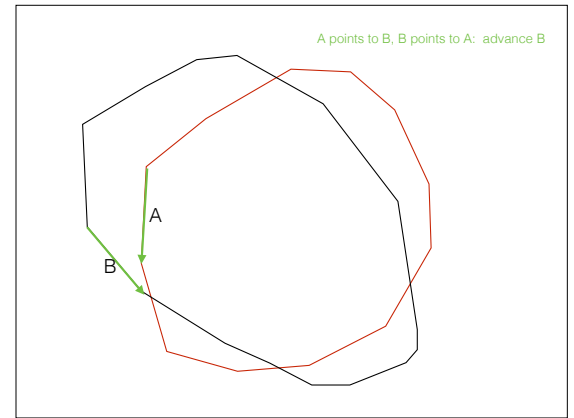
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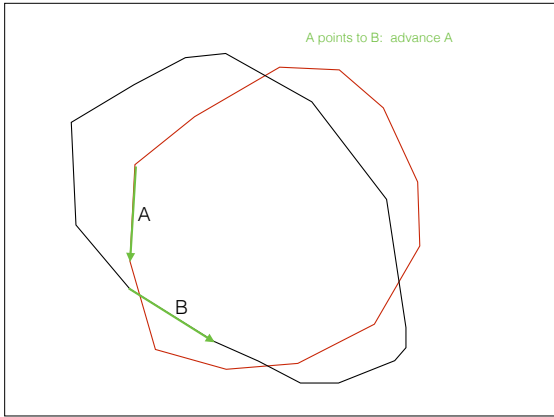
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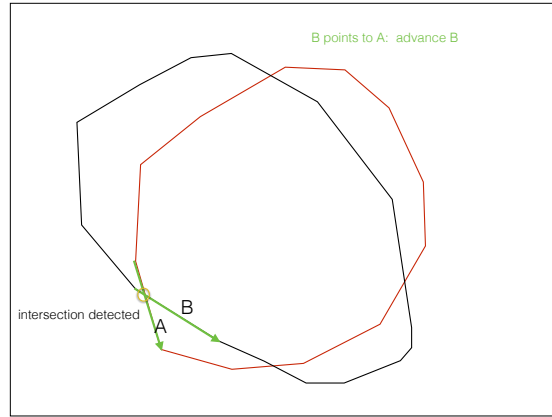
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