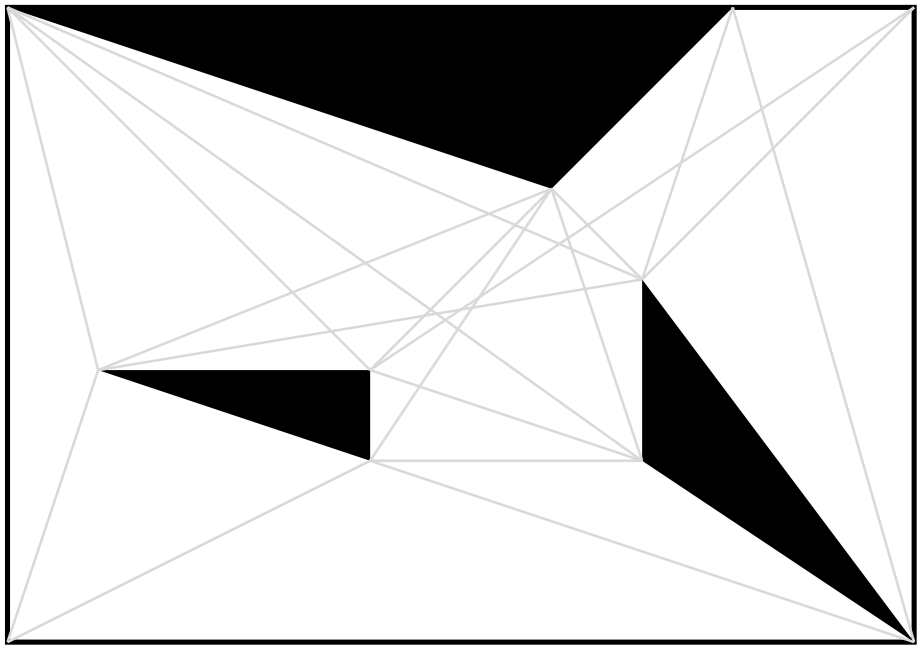
Outline

How to compute Obstacle Distance

- Existing works rely on *visibility graph* (VG)
  - any pair of visible points has an edge
- Run shortest path algorithm on *VG* (e.g. *Dijkstra*)
- Building global VG can be expensive - $O(V^2)$ (V: the number of vertex)



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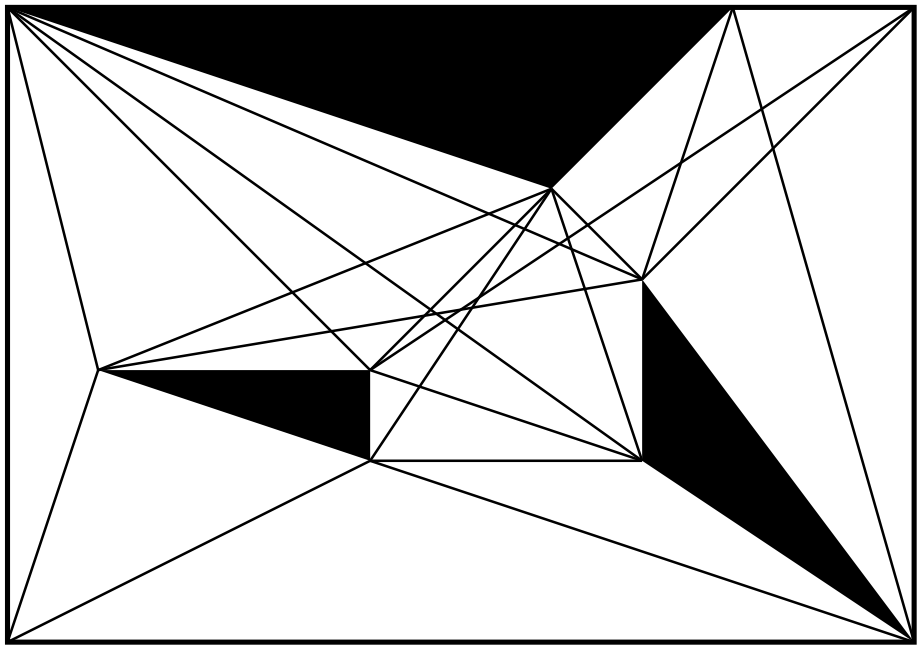

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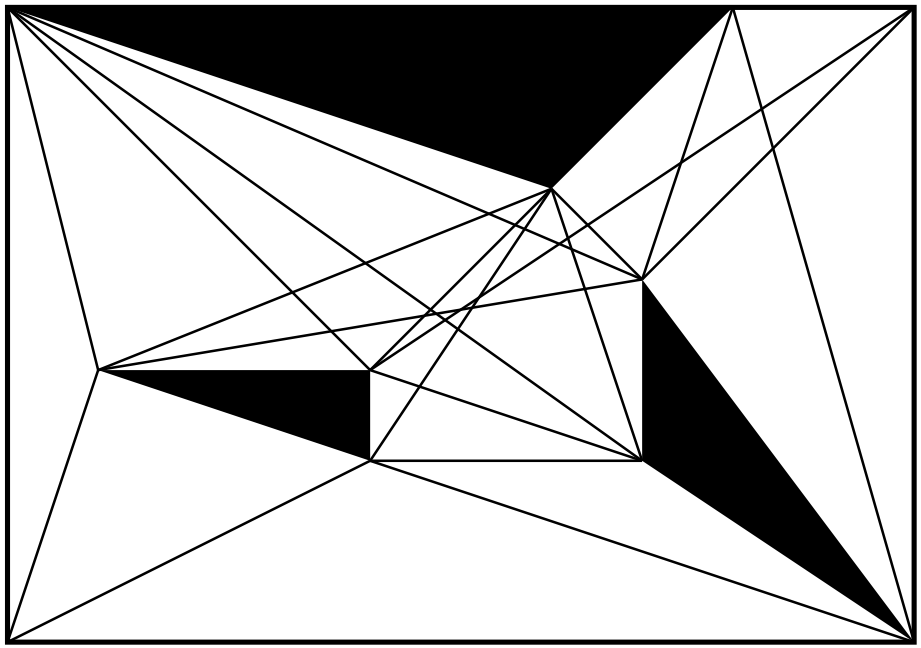

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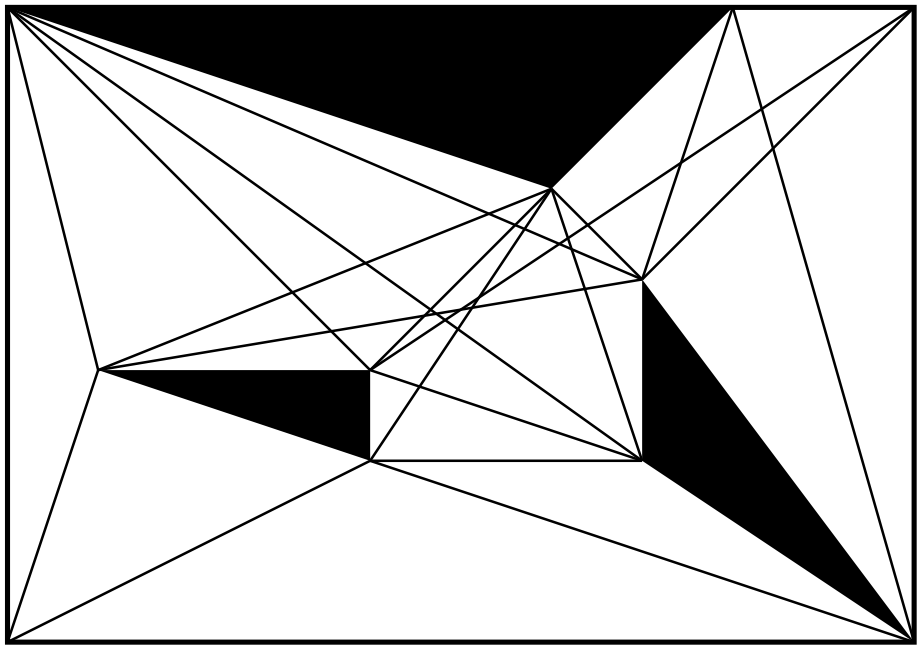
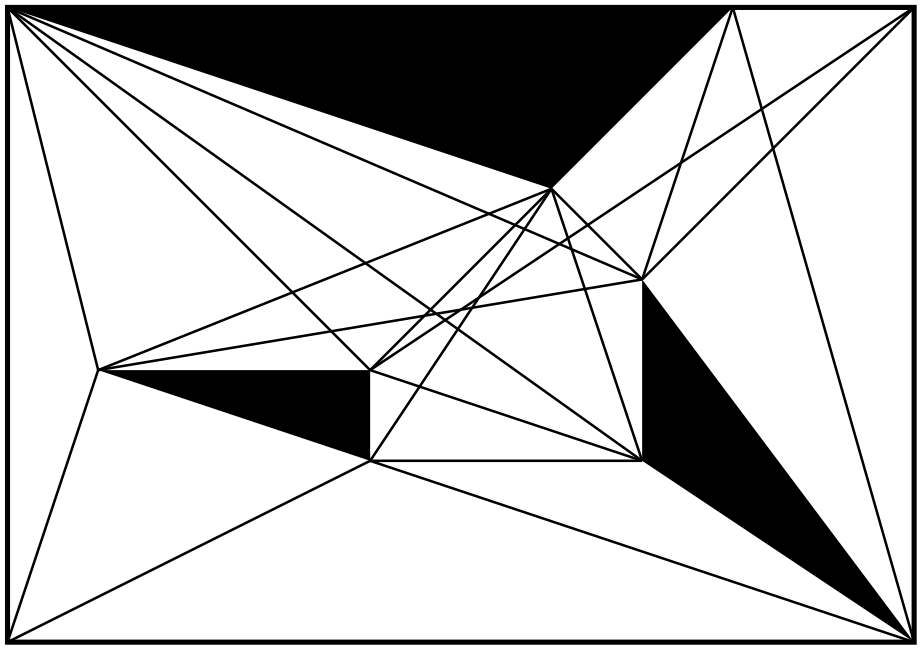


How to compute Obstacle Distance

- Global VG: expansive
- Only consider query related area?
- *Zhang, EDBT 2004: Local Visibility Graph (LVG)*



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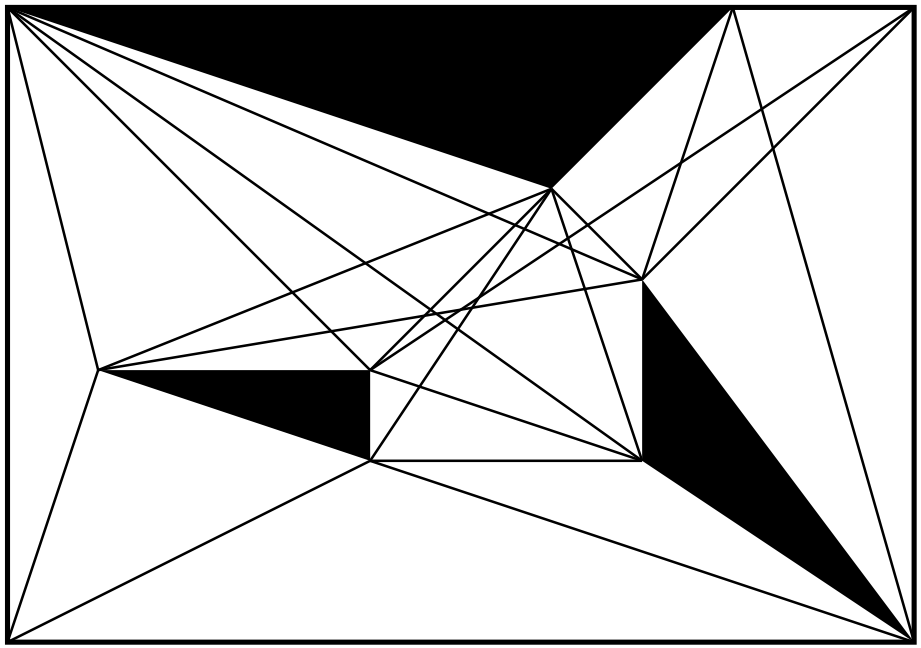

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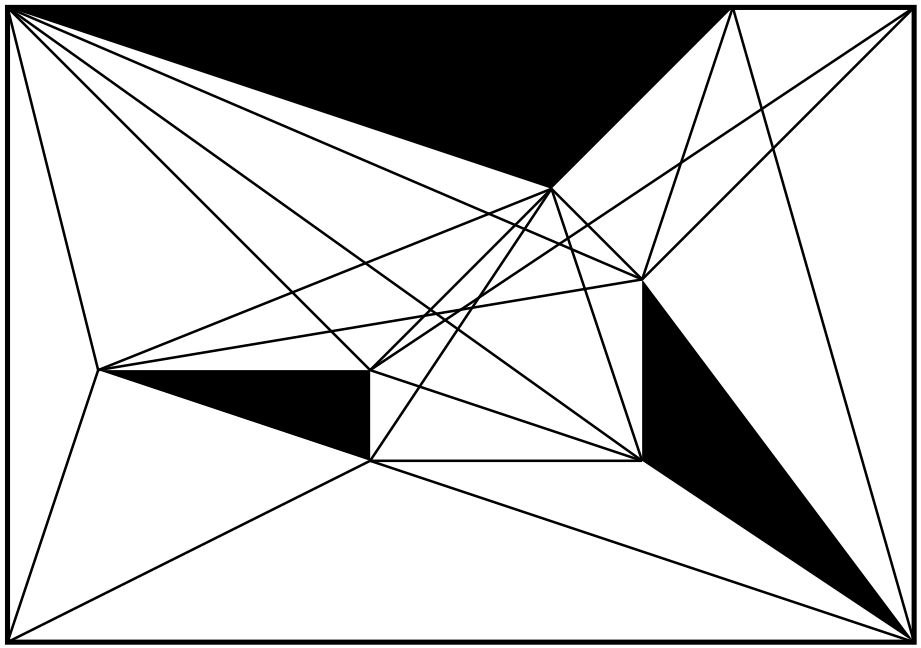

Obstacle Distance Computation: *LVG*

- Given: q, t
- Start with a small VG in $circle(q, r)$
  - $r = d_e(q, t)$
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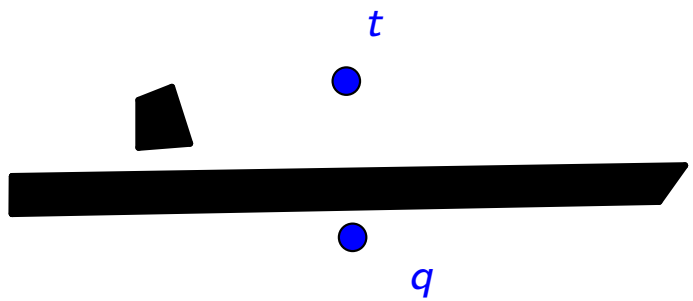

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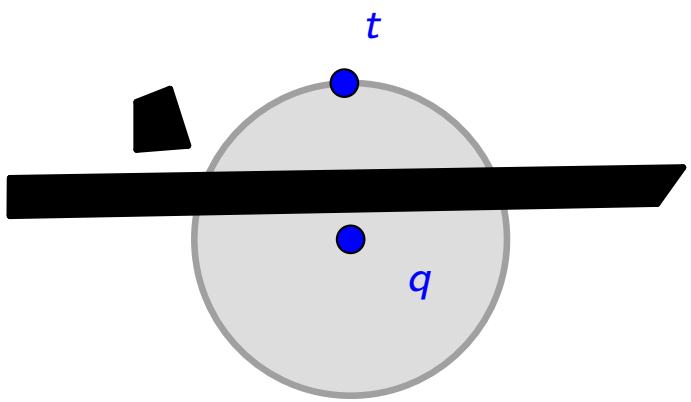

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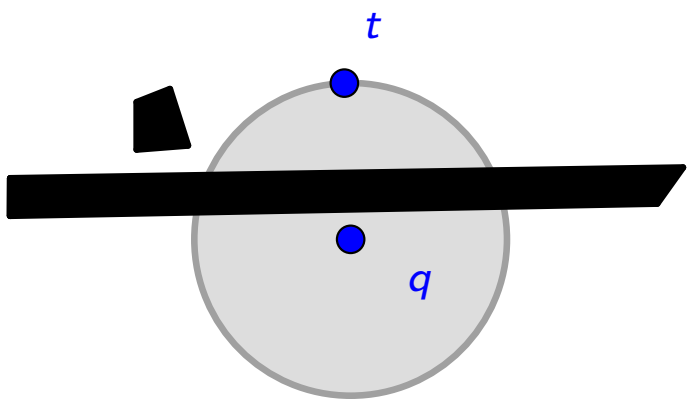

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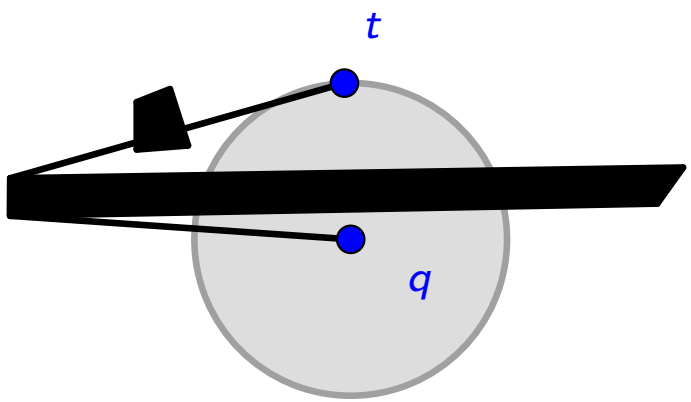

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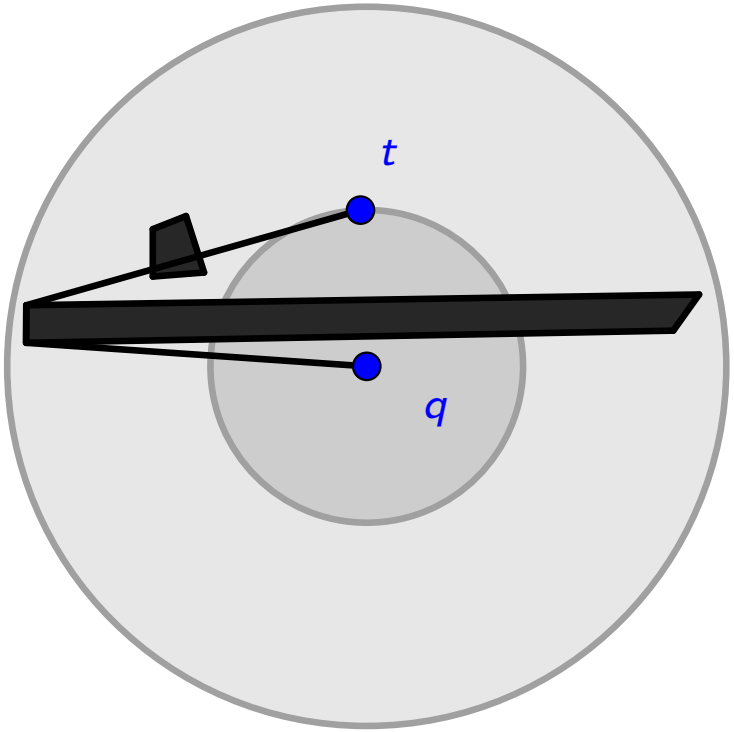

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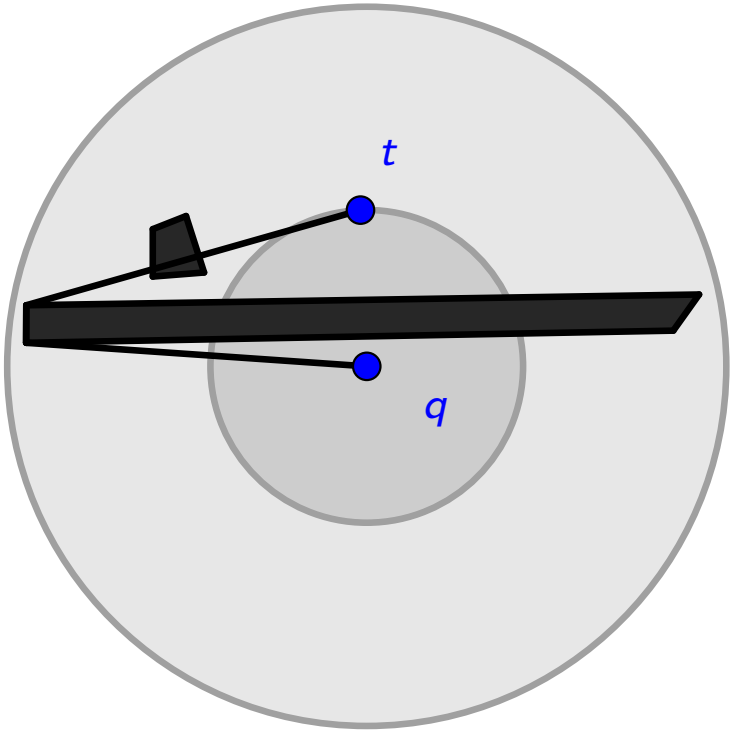

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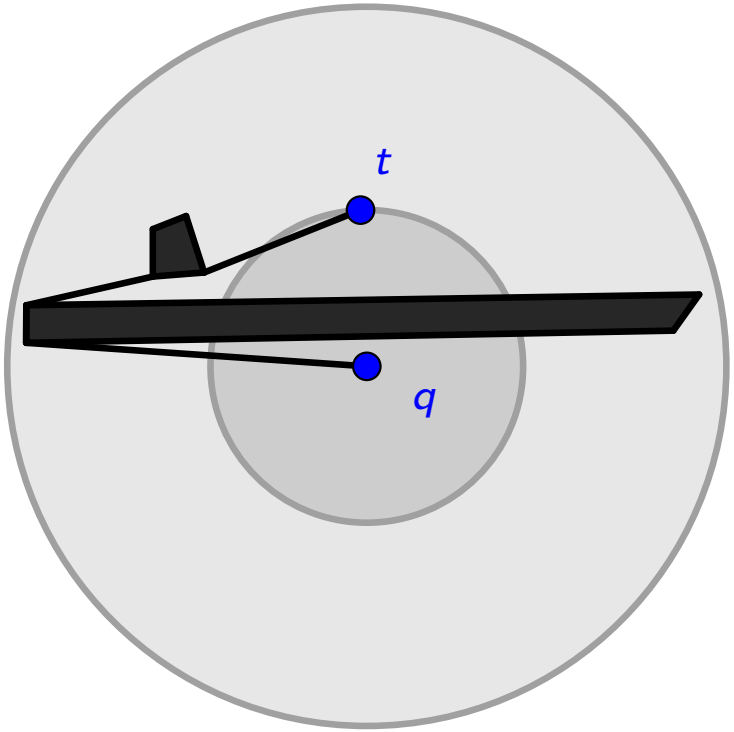

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