Wall Hugger and G143

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Outline

Example

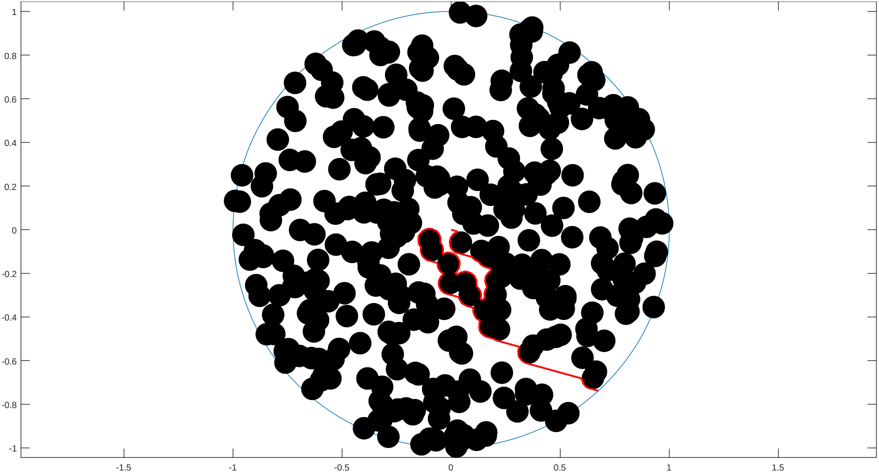


Figure: One realization of the WallHug algorithm. Oracle calls: 689, Path length: 2.37

Outline

Realisation

This algorithm extends from Test Algorithm 2; ensuring path feasiblity, changing our step size and removing loops.

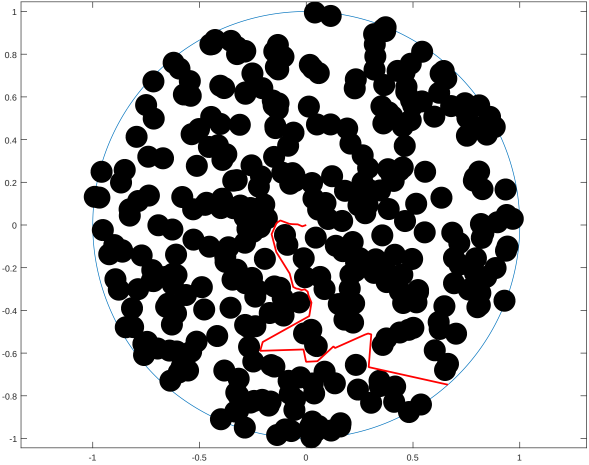
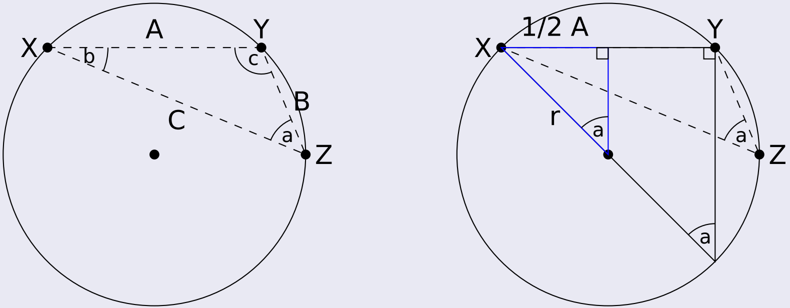


Figure: An example path found with $n = 400$ and $r = 0.05$.

Find the radius

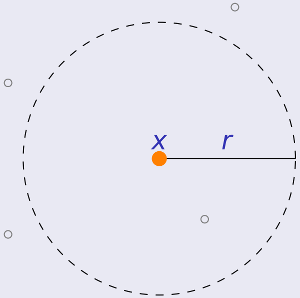


Left Figure: $\Delta(ABC) = \frac{1}{2}BC\sin(a)$.
Right Figure: $2r = \frac{A}{\sin(a)}$.
Find the radius: $r = \frac{ABC}{4\Delta(ABC)}$.

Outline

Psuedo Oracle

If every point within r of x is within r of a miss then x is also a miss.



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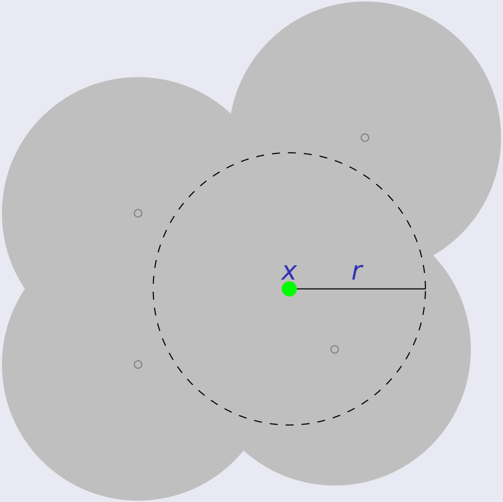

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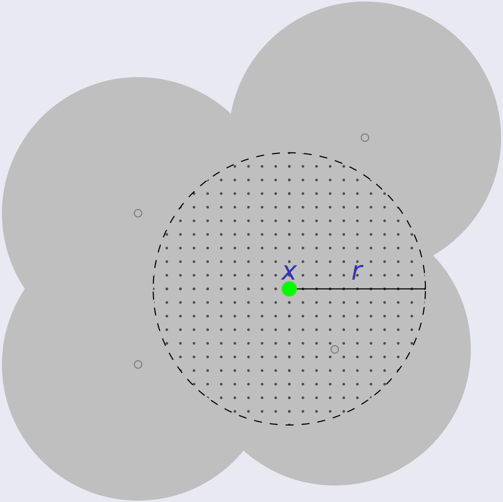
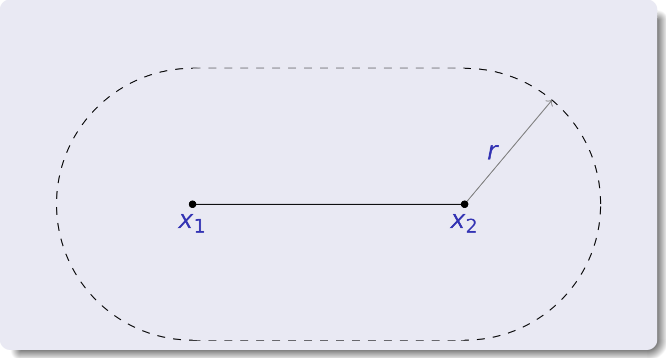


Outline

Side points

- Line segment has length $2r$
- We want every point within r of the line segment to be within r of a miss
- Test n points each side of line



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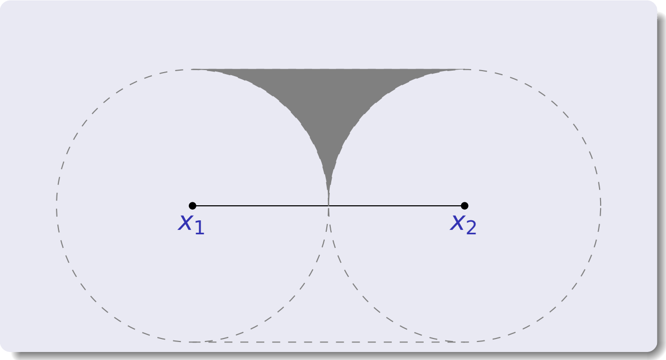

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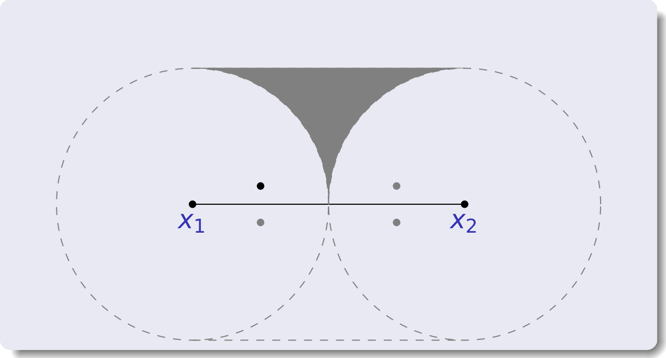

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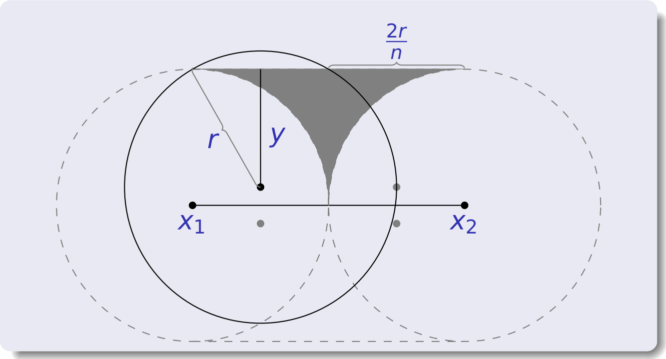

$$r^2 = y^2 + \frac{r^2}{n^2}$$

$$y^2 = r^2\left(1 - \frac{1}{n^2}\right)$$

$$y = r\sqrt{1 - \frac{1}{n^2}}$$

Place points at distance $r - y$ from path segment.

Outline