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| *Algorithm: Optimize Path Algorithm* |
| Input: Original path nodes P = [P1, P2, ..., Pn], Obstacle grid O |
| Output: Optimized path nodes O\_path = [P1, P2, ..., Pm] |
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| 1. Initialize: |
| • O\_path ← ∅ |
| • Start point ← P1 |
| • Add P1 to O\_path |
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| 1. Set front endpoint ← Start point |
| 1. Set back endpoint ← P2 |
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| 1. For i = 2 to n do: |
| 1. Connect front endpoint and current node Pi to form a line segment |
| 1. Check if the line segment crosses any obstacle grid in O |
| 1. If the line segment crosses an obstacle then: |
| 1. Add the previous node Pi-1 to O\_path |
| 1. Set Start point ← Pi-1 |
| 1. Set front endpoint ← Start point |
| 1. Set back endpoint ← Pi+1 |
| 1. Continue to the next node |
| 1. Add the end point Pn to O\_path |
| 1. Return O\_path |