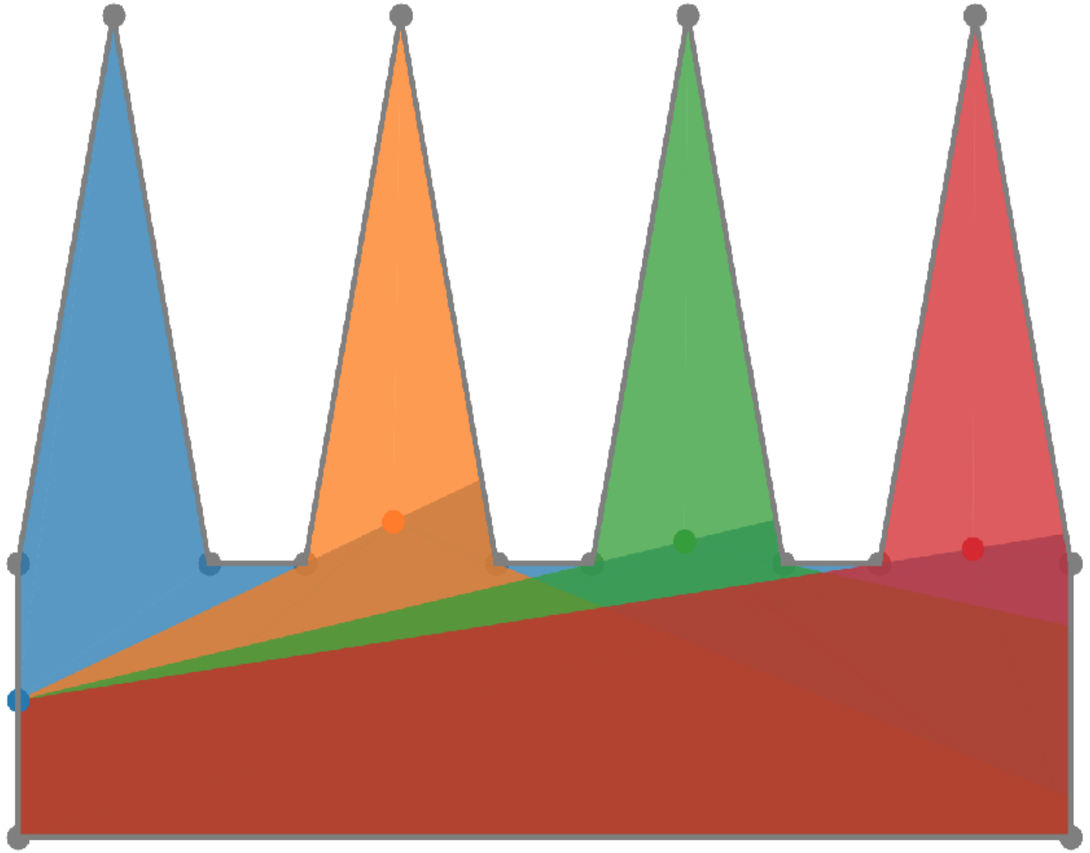
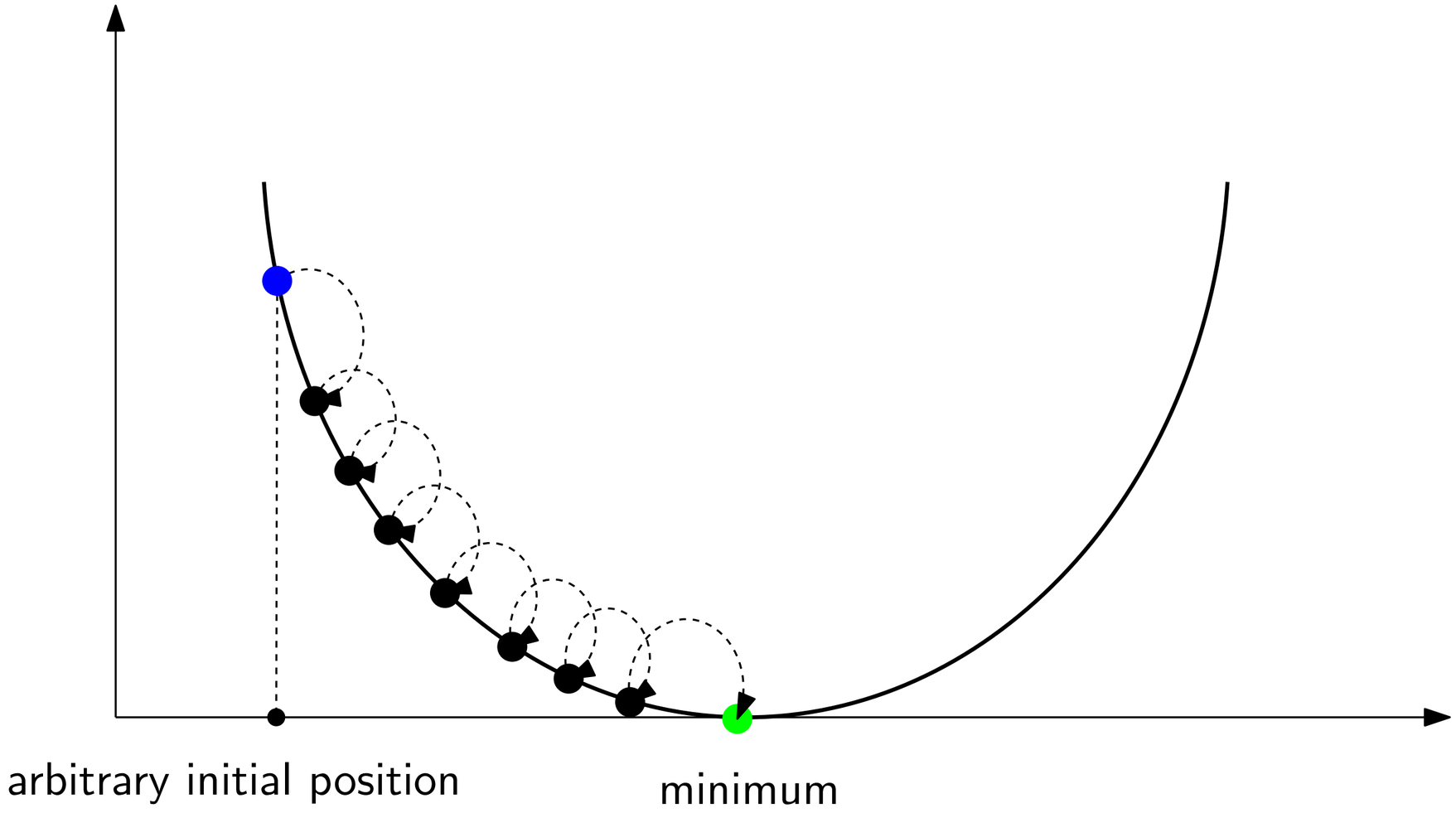
Solving the Art Gallery Problem Using Gradient Descent

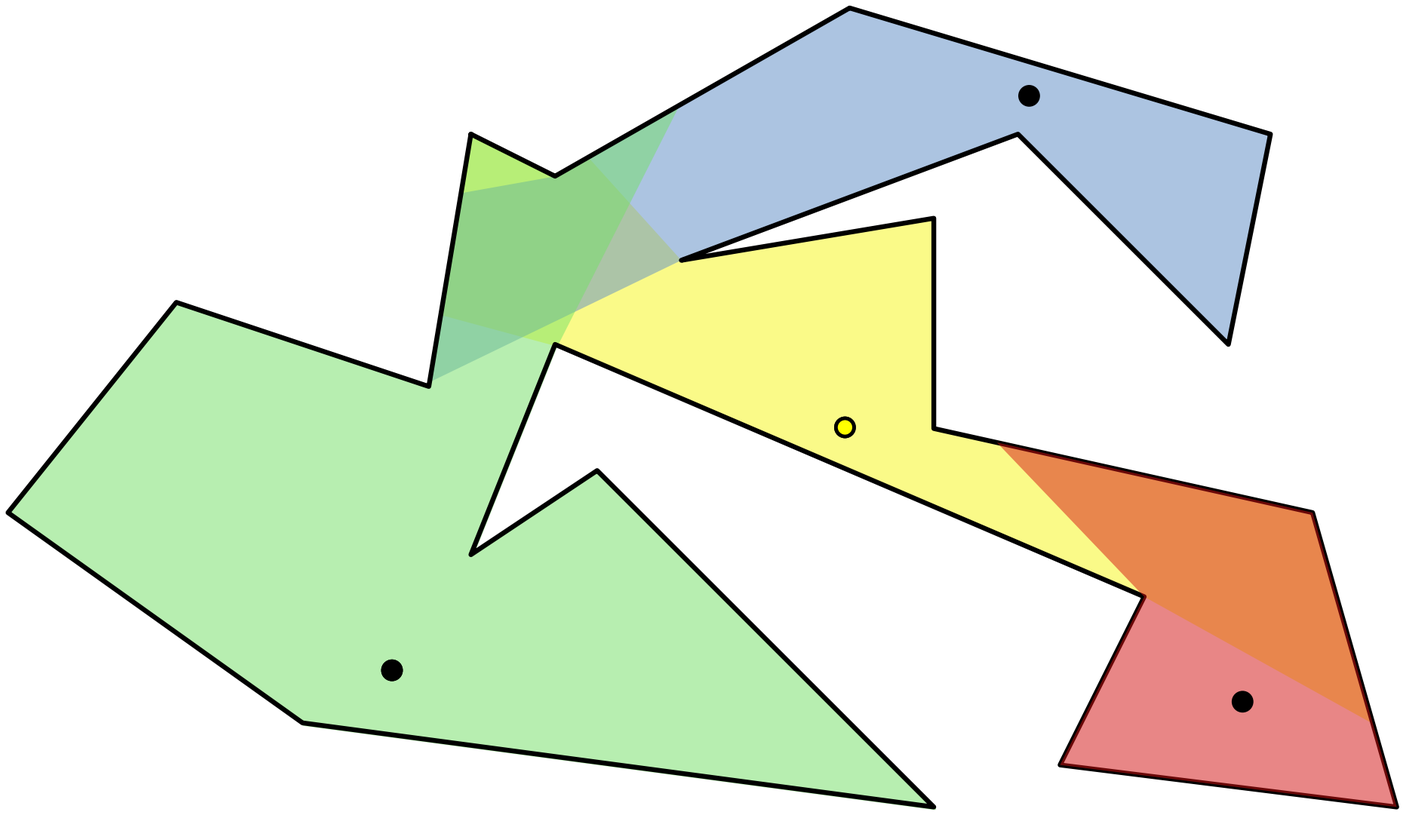
Geo Juglan
Till Miltzow



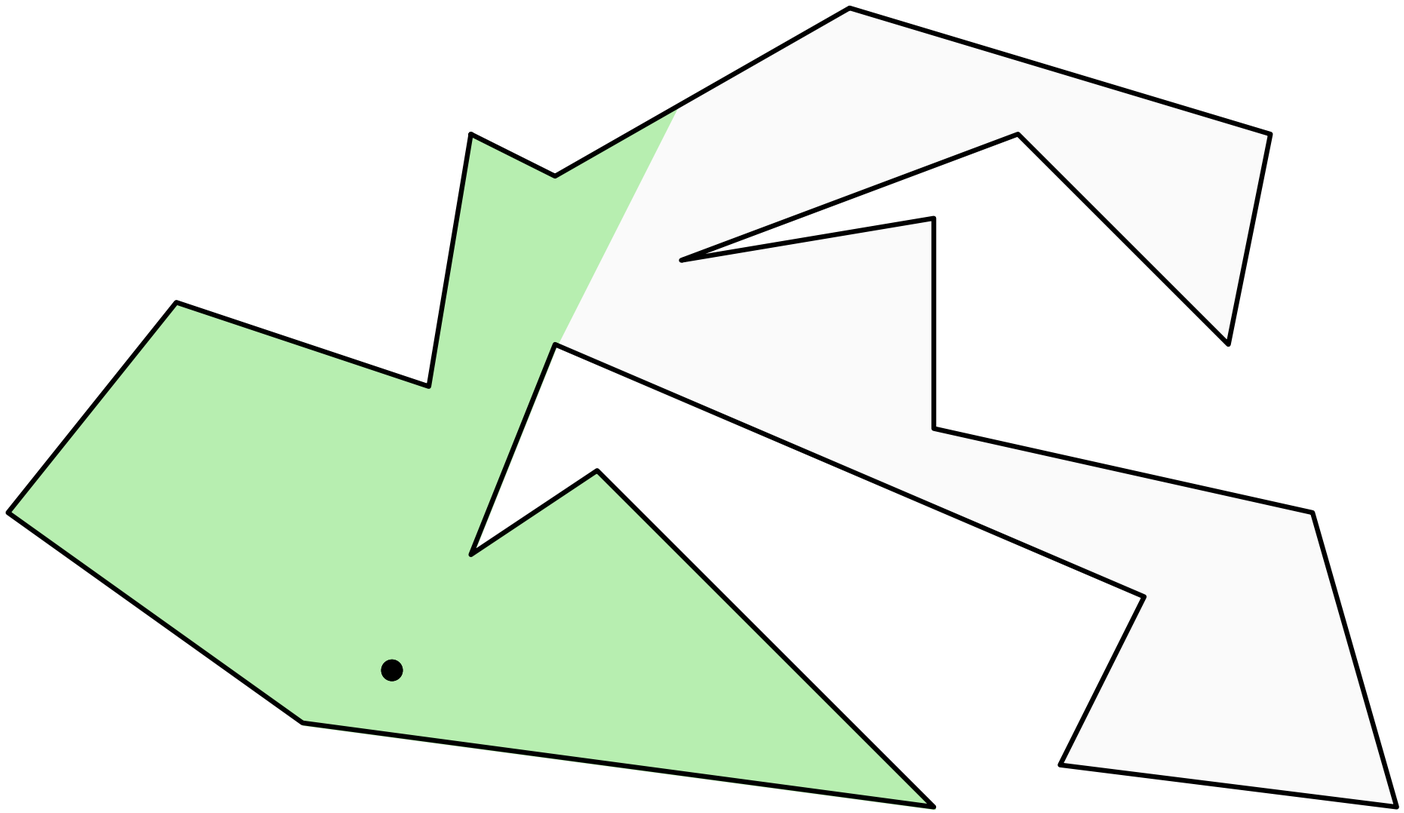
Gradient Descent



The Art Gallery Problem



The Art Gallery Problem



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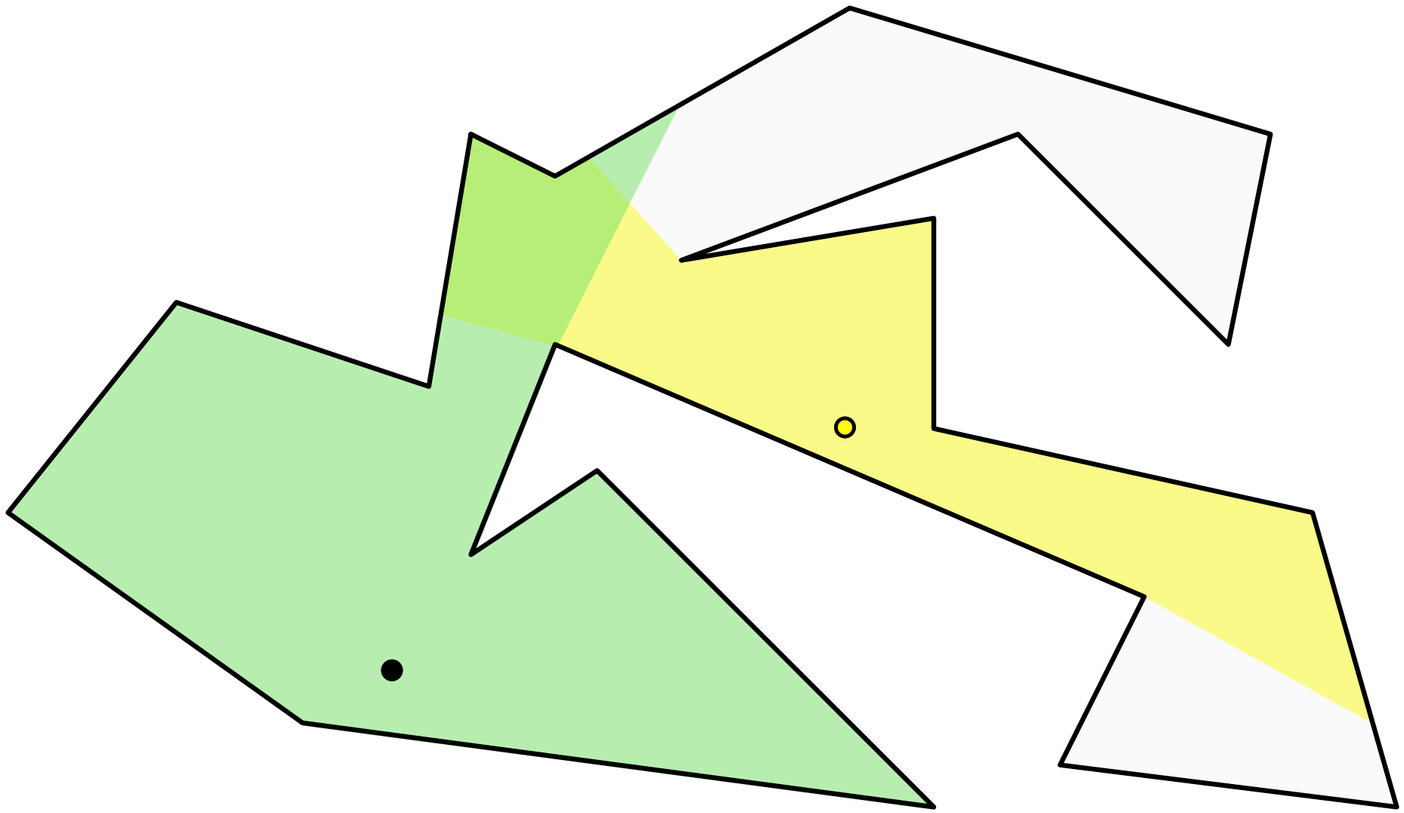
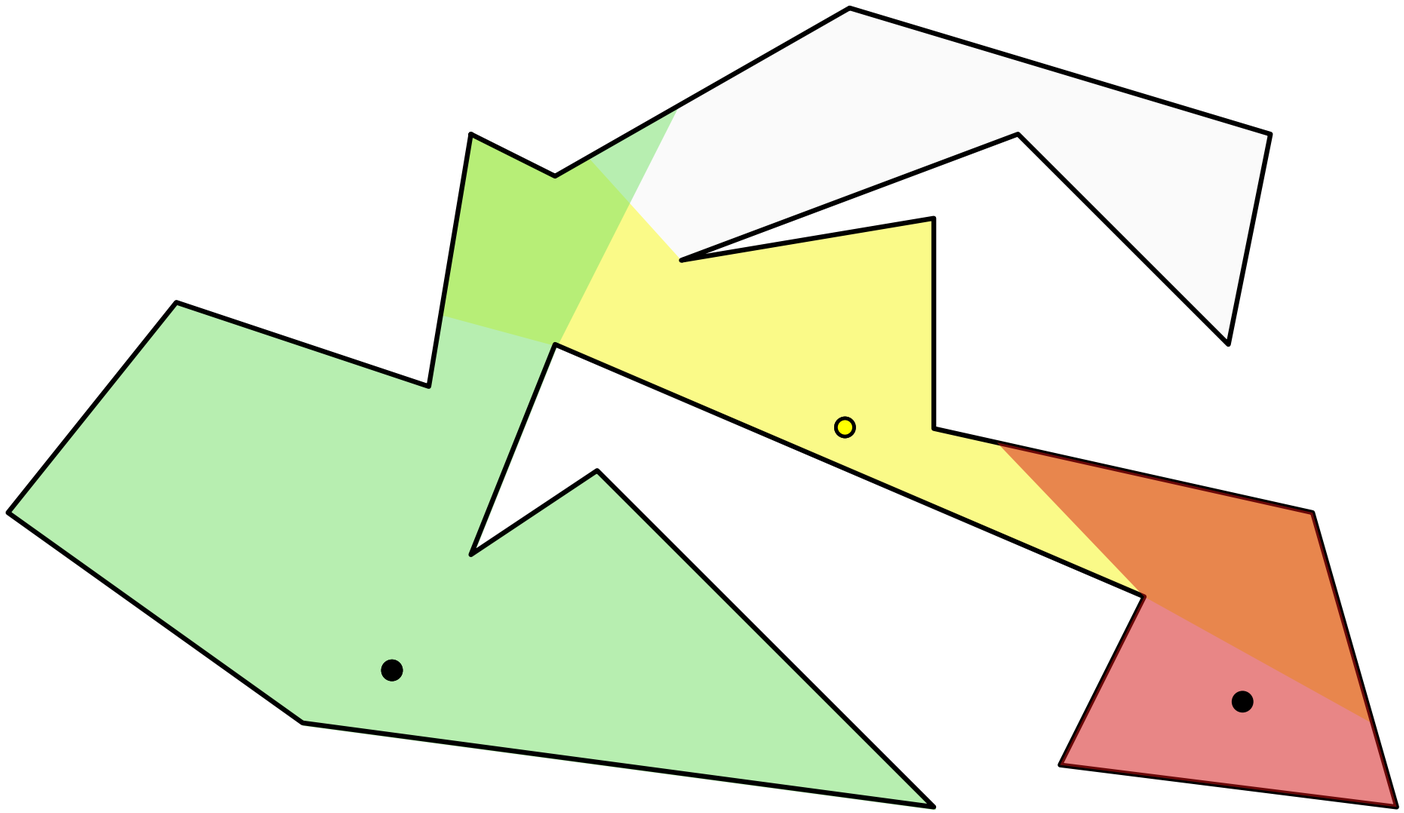


The Art Gallery Problem



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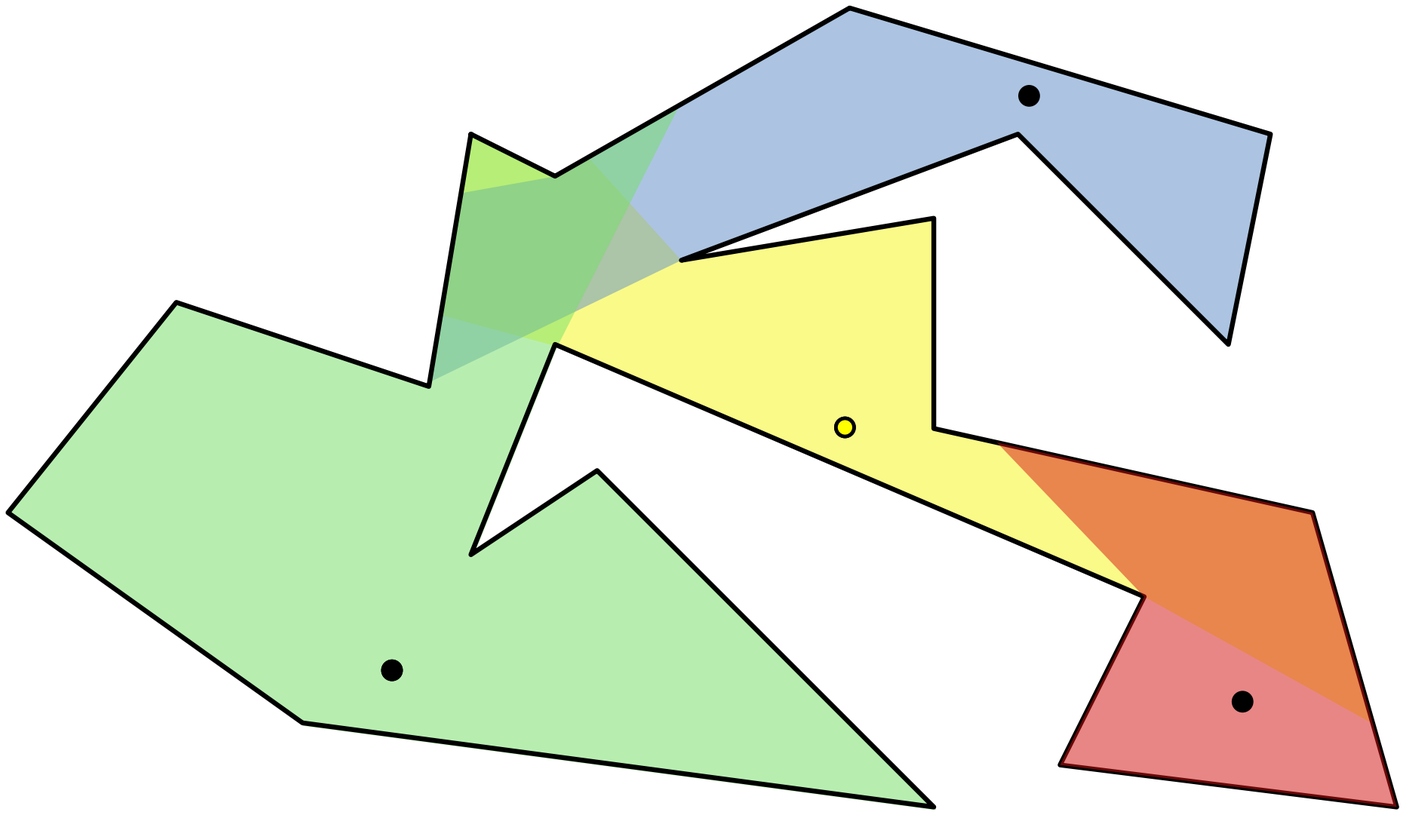
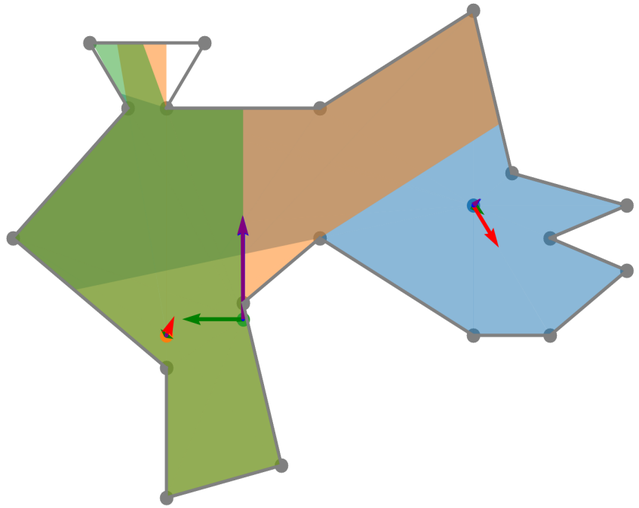
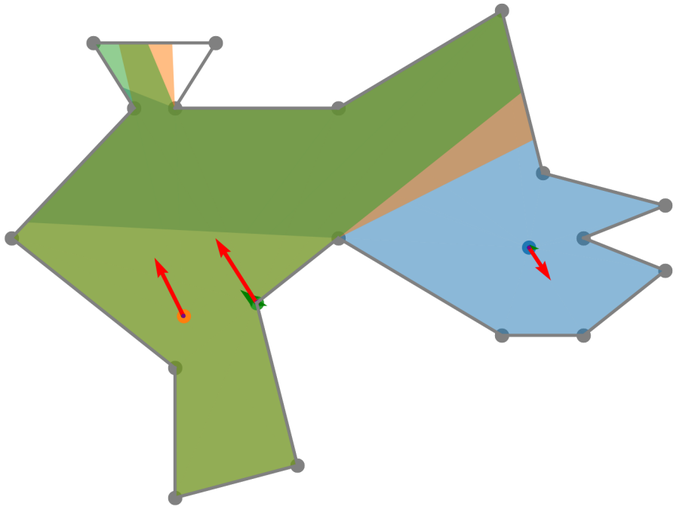


The Art Gallery Problem

Gradient Computation for Iteration #0

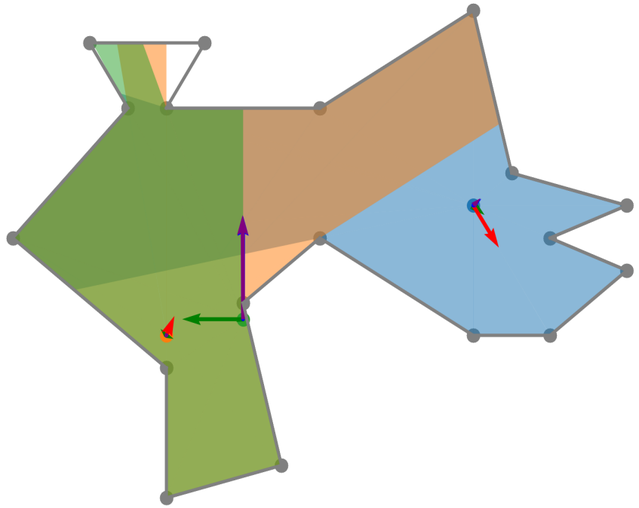


Gradient Computation for Iteration #1

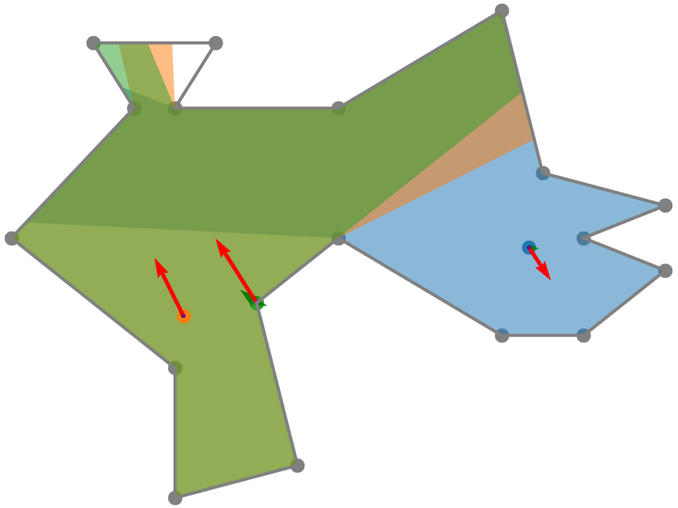


The Art Gallery Problem

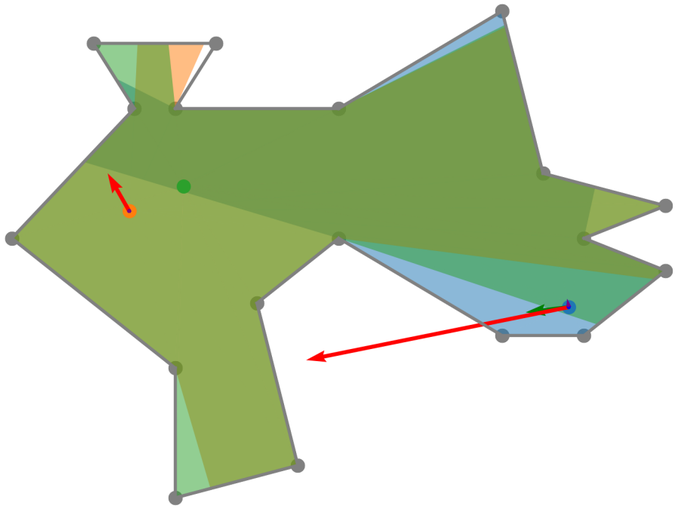
Gradient Computation for Iteration #0



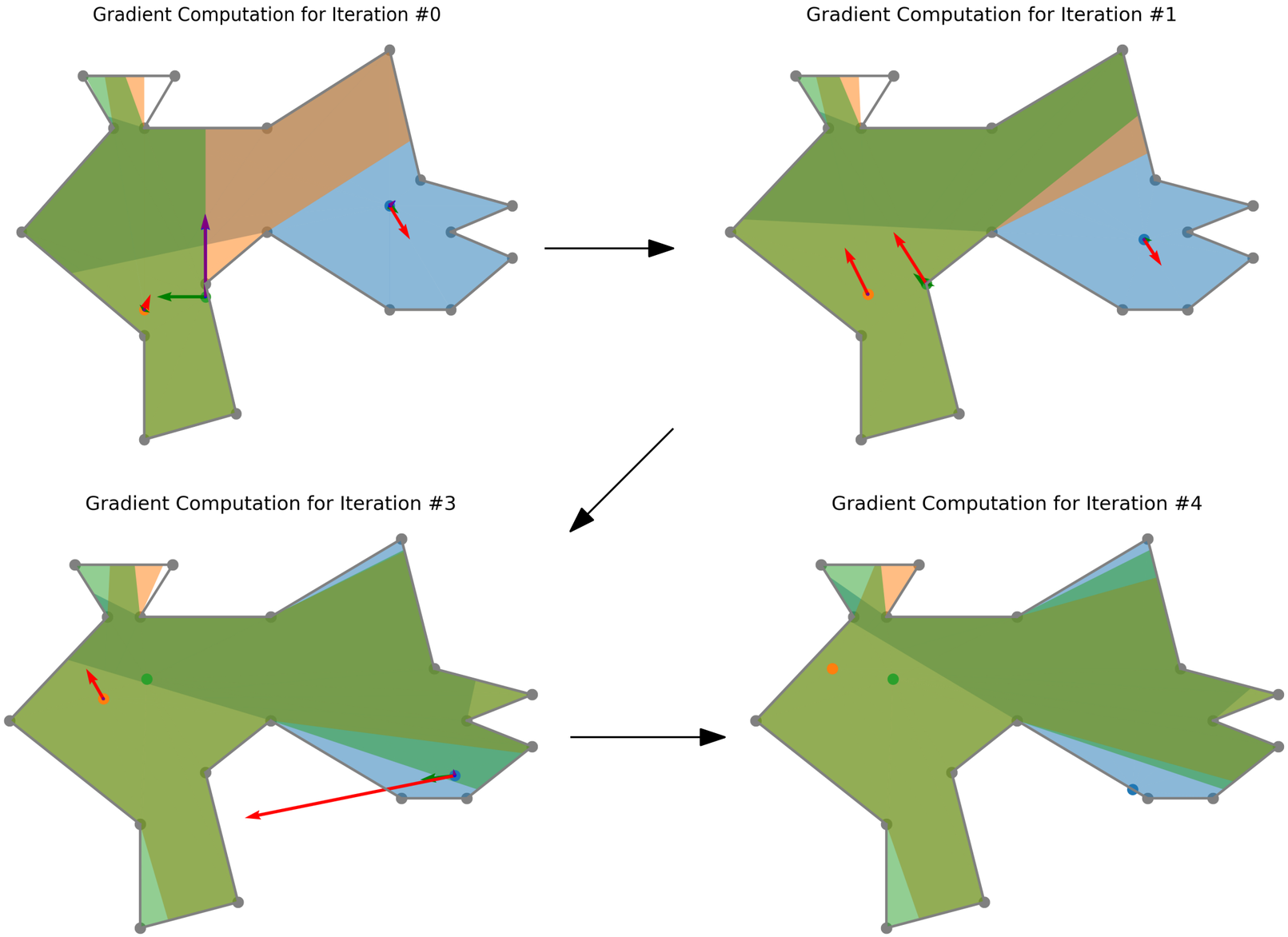
Gradient Computation for Iteration #1



Gradient Computation for Iteration #3



The Art Gallery Problem



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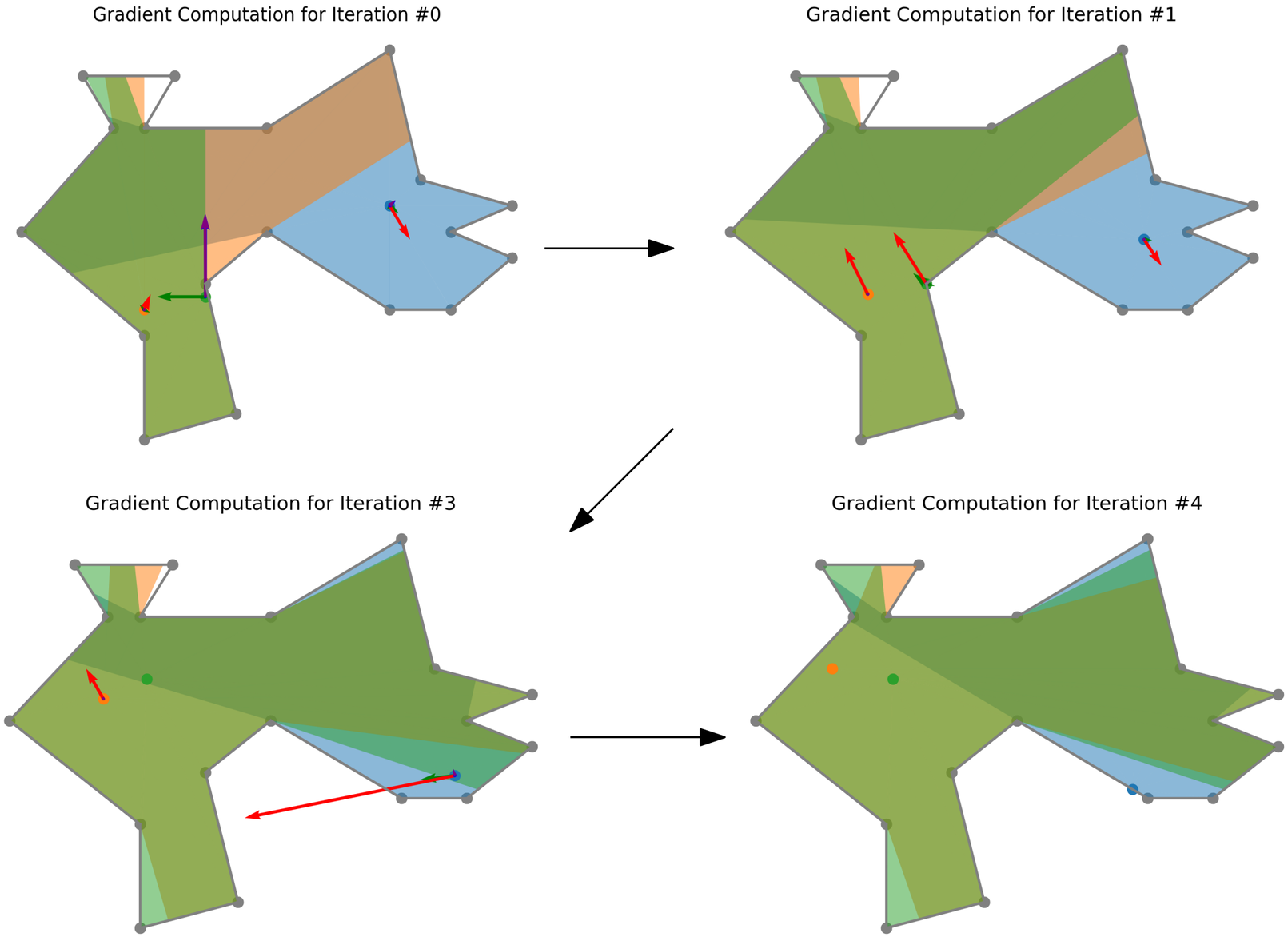
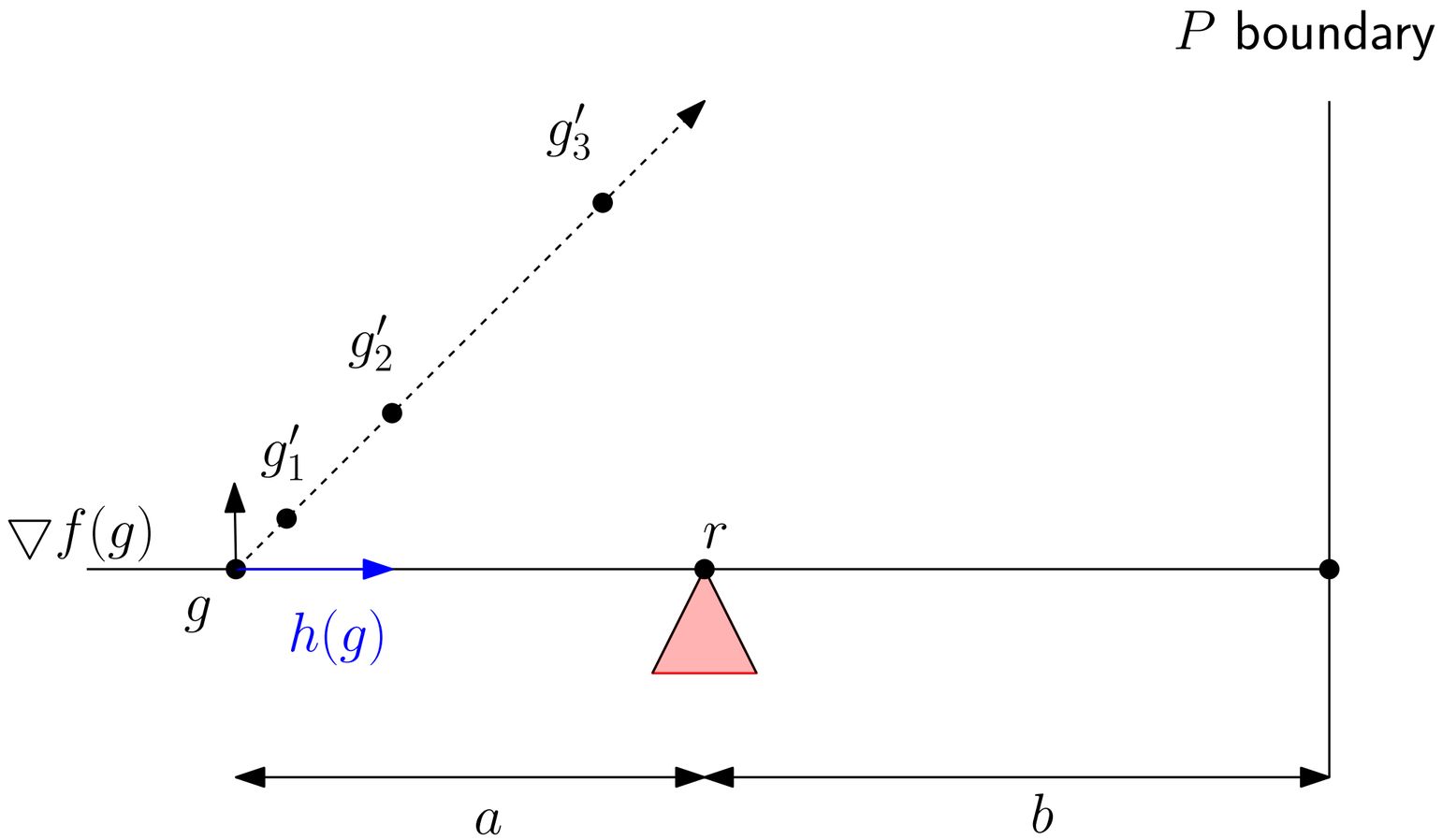
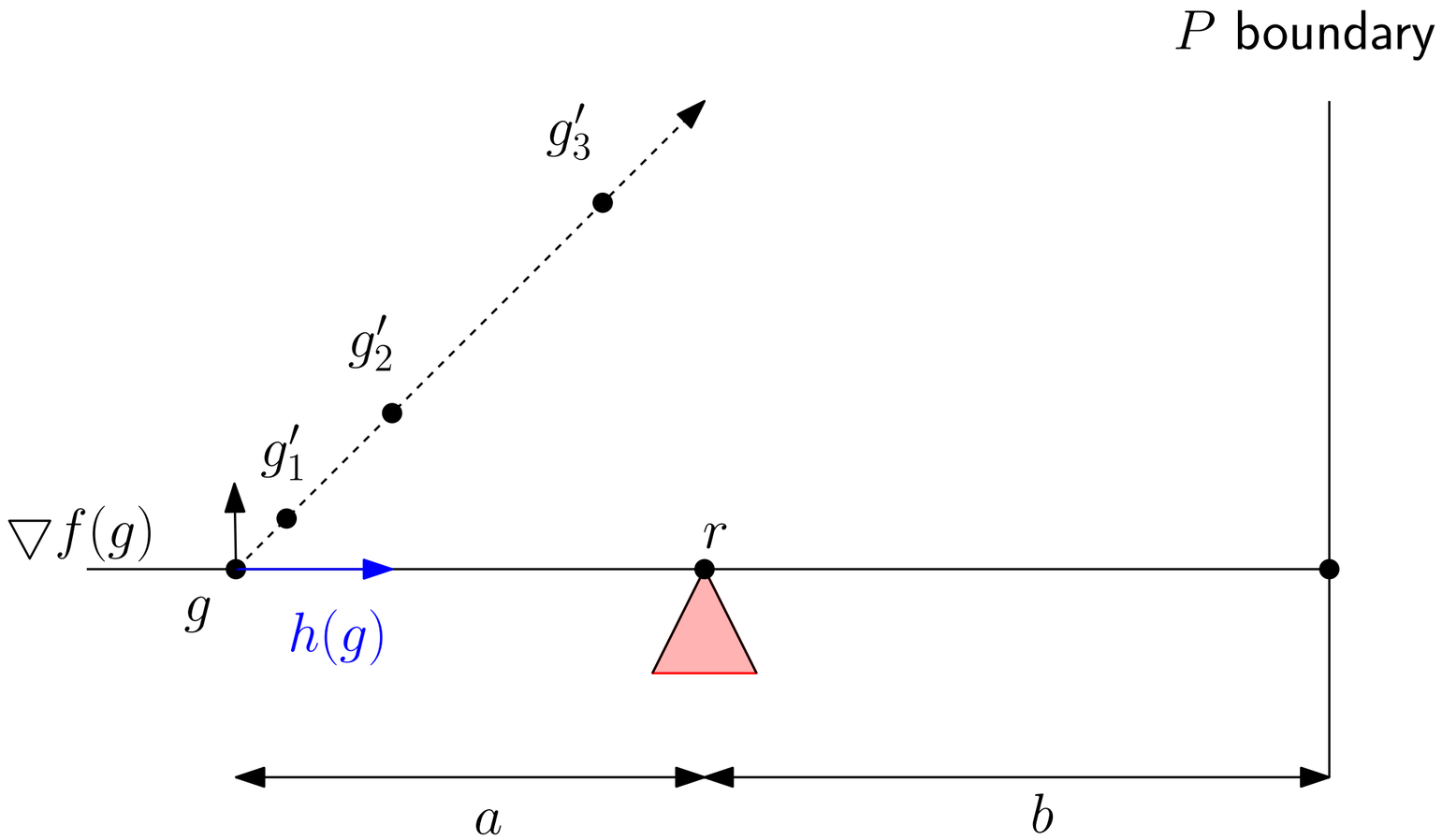


Heuristics: Line Search



...and more

Heuristics: Line Search



...and more

Follow-up

use my code (or not) as a starting point to...

...improve the algorithm's robustness, performance and scalability

...implement other heuristics (so many more ideas!)

...test the algorithm on larger polygons with more guards

...solve bugs