# Motion Planning

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Overview:

For this project, we were interested in studying motion planning, specifically with regards to graphical implementations. Our project is made up of two major separate components: an implementation of A\* search in a Javascript/HTML page, and a customized version of A\* search using Unreal Engine(built on Unreal Engine’s pathfinding algorithm).

Explanation of A\*:

A\* is a common algorithm used in pathfinding. Given a graph made up of connected nodes with a start and end point(s), A\* dynamically finds a path from the start towards the end point and navigates around any obstacles. If it is possible to reach the end from the beginning, A\* will be guaranteed to reach the end. The basic structure of A\* is quite simple. At some point, looking to reach the end point, the algorithm examines all of our current point’s neighbors, and evaluates them using two heuristics:

First, it gets an estimate of the distance from the start node, and second it gets an estimate of the distance to the end node. The algorithm then picks the node with the lowest total sum of the two estimates, and then repeats the process until there are no unvisited neighbors (in which case there is no solution) or reaches the end node.

A\* Javascript Implementation

A\* Unreal Implementation