Search

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- Korf paper
  - exponential- space algorithms like A* are impractical on large problems
  - IDA* - is a depth first search that looks for increasingly longer solutions in a series of iterations using lower bound heuristic to prune branches once their estimated length exceeds the current iteration bound
  - Manhattan distance - the distance between two points measured along axes at right angles
- Modules
  - Breath first search:
    - BFs = start traversing from a selected node and traverse layer wise exploring the neighboring nodes (horizontal)
  - Uniform cost search
    - Variant of dijkstra algorithm
    - Lowest cost path between nodes
    - BFS returns shortest path to the goal even though there is a lower cost path with more edges
    - Uses a priority queue as

    - Sorts frontier nodes in order of g → cost of the

there is a lower cost path
with more edges

frontier
- Sorts frontier nodes in
  order of g → cost of the
  path from the start node
  to the frontier modes
- when choosing a mode for
  expansion, select from
  frontier with minimal
  value of g, the are with
  the lowest cost
- Depth first search
  - Start of root node -
    explores as far as possible
    along each branch before
    backtracking
- A* search
  - Picks the node according
    to a value f (sum of g and
    h)
  - G = movement cost to
    move from the starting
    point to a given square on
    the grid
  - h= estimated movement
    cost to move from that
    given square on the grid
    to final destination
- Bidirectional search
  - Forward search from
    source/initial vertex
    toward goal vertex
  - Backward search from
    goal/target vertex toward
    source vertex
  - Can be guided by a
    heuristic estimate of
    remaining distance from
    source to goal, vice versa

manhattan distance
$= |x_1 - x_2| + |y_1 - y_2|$

$$\nearrow^0$$
$1 \rightarrow 2 \rightarrow 3$
$4 \rightarrow 5 \rightarrow 6 \rightarrow 7$