

# Tutorial 3

- A\* and Greedy search “Trace workings”
- Heuristics
- Heuristic Function

# Trace workings

- For each step taken (each turn through the loop), show:
  - The nodes currently in the fringe
  - The values of each of the nodes
  - The path taken to get to each of the nodes (if this is relevant)
  - Indicate which node will be chosen for goal check and expand
- Recommended:
  - Order all of the nodes in the fringe
- Final:
  - Path found by algorithm and path cost of this path
- A\*:
  - Note that path cost is total cost so far, not just the path from the previous step

# Heuristics

- A measure of how good a state is
- For informed search:
  - An estimate of the path cost from a state to the goal state
  - How far away is this state from the goal?
  - Admissible: doesn't overestimate this path cost
- For adversarial search:
  - An estimate of how well the agent will do in the game from a state
  - How likely is the agent to win from this state?
  - 2 player: higher values are good for MAX, lower values are good for MIN

# Heuristic Function

- Returns a single value for a state indicating how good that state is (path cost to goal or 'chance' of winning)
- Should be able to calculate a value for any state in the state space
- Input = state
- Output = value of state
- Does not choose the best move or use strategy (although pattern recognition can be built in to the heuristic function)