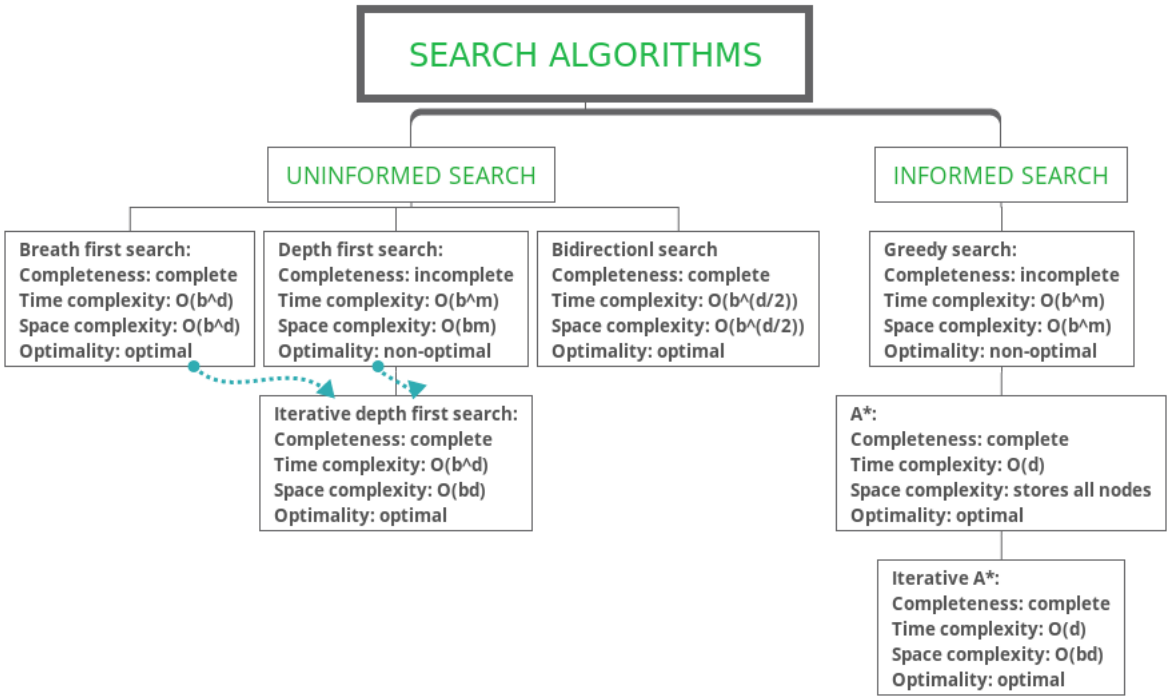
Hocschule Bonn-Rhein-Sieg

Artificial intelligence for robotics. Lecture date 10.11.2015

Maximilian Schobel, Petr Lukin, Mahbub Alam

November 14, 2015

1 Classification of search algorithms



1.1 Proofs

- Breadth first search is Uniform cost search with constant past cost.
-
- Uniform cost search is a A* search with the heuristic function $h(n) = 0$.

1.2 A* search

- A* is complete is every finite path has finite cost and heuristic is consistent, i.e. $f(n)$ is non-decreasing along any path.
- A* stops the search process when heuristic function i.e. distance to the solution is 0.
- A* with consistent heuristic have non-decreasing heuristic function, it means that the algorithm expands nodes in order of increasing path cost. The frontier expands as a contours with equal value of $f(n)$. Due to consistent heuristic, algorithm is able to avoid infinite loops.