Solving Problems by Searching

ARTIFICIAL INTELLIGENCE

JUCHEOL MOON

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Problem-solving agents

- On holiday in Romania; currently in Arad.
- Flight leaves tomorrow from Bucharest

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Holiday in Romania

- Formulate goal:
  - be in Bucharest
- Formulate problem:
  - states: cities (nodes)
  - actions: move to the next cities
- Find solution:
  - Path from Arad to Bucharest

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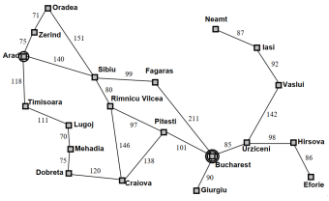
Tree search example



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Uninformed search strategies

- Uninformed strategies use only the information available in the problem definition
  - Breadth-first search
  - Depth-first search
  - Uniform-cost search (Dijkstra's algorithm)
  - Depth-limited search
  - Iterative deepening search

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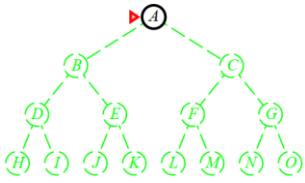
Depth-limited search

- depth-first search with depth limit l,
  - i.e., nodes at depth l have no successors



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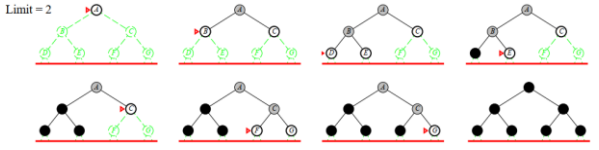
Iterative deepening search

```
function Iterative-Deepening-Search(problem)
    for depth 0 to ∞ do
        depth-Limited-Search(problem, depth)
```



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