School of Data and Computer Science, Sun Yat-sen University

T01 Search and game tree search

17341137 Zhenpeng Song

September 16, 2019

Contents

1 Q1

- Question Review:

  Consider travel in Romania from Arad to Bucharest. Trace the operation of uniform-cost search with cycle-checking: draw the search tree.

- Solution:

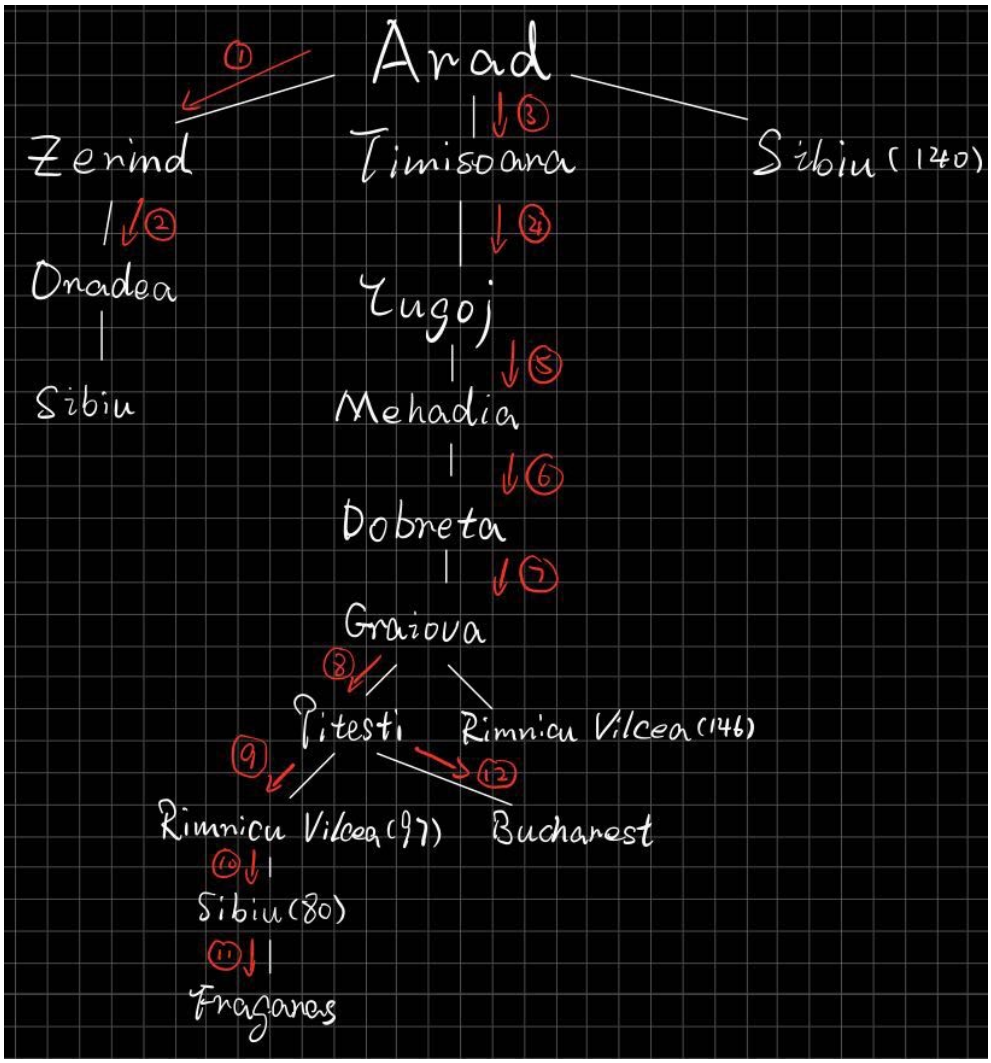

Figure 1: Q01: Search Tree for Q01.

2 Q2

- Question Review:

  The missionaries and cannibals problem (see the lecture notes): Consider the case of M = 5 and K = 3. Use the heuristic function h(n) = M + C - 2B. Trace the operation of A* with cycle checking: Draw the search tree; for each node, mark its g and h values.

- Solution:

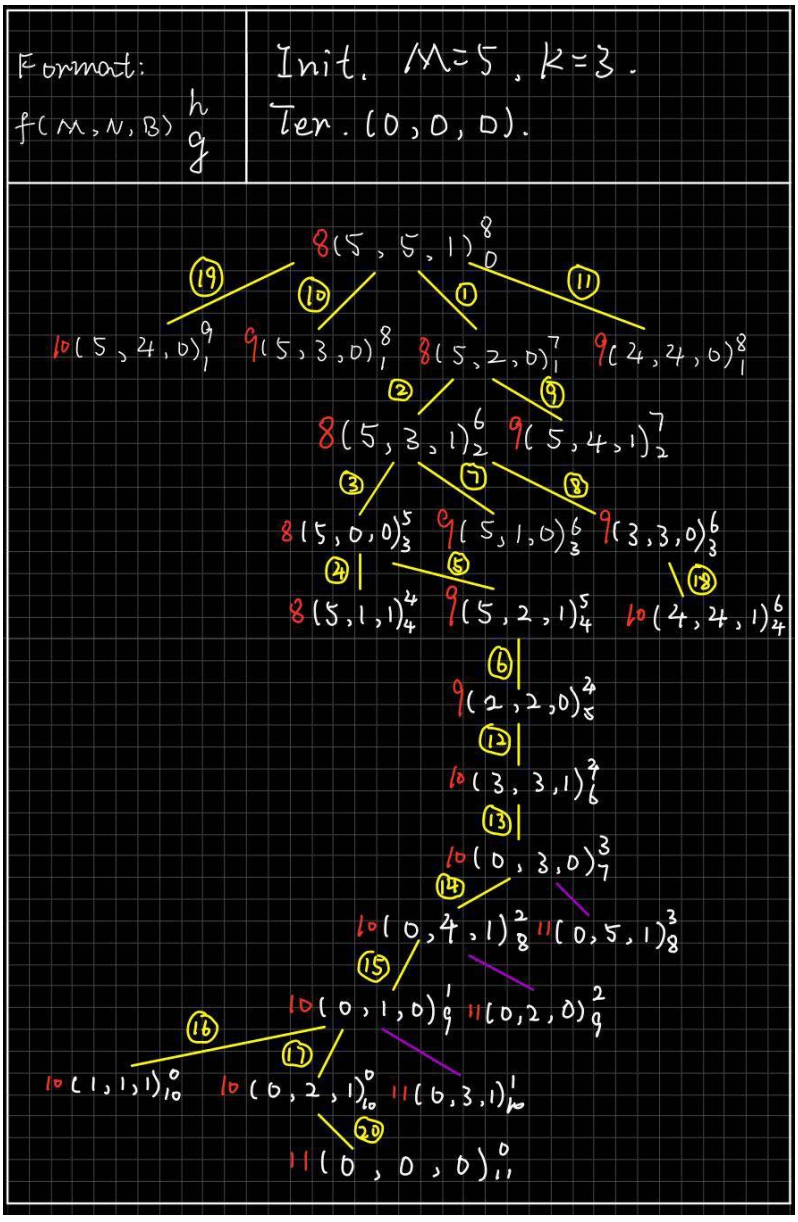

Figure 2: Q02: Search Tree for Q02.

3 Q3

- Question Review:

  Perform alpha beta pruning on the following game tree and compute the utility value of the root.

- Solution:

  Red Lines: Search Path.

  Blue Lines: Prunning.

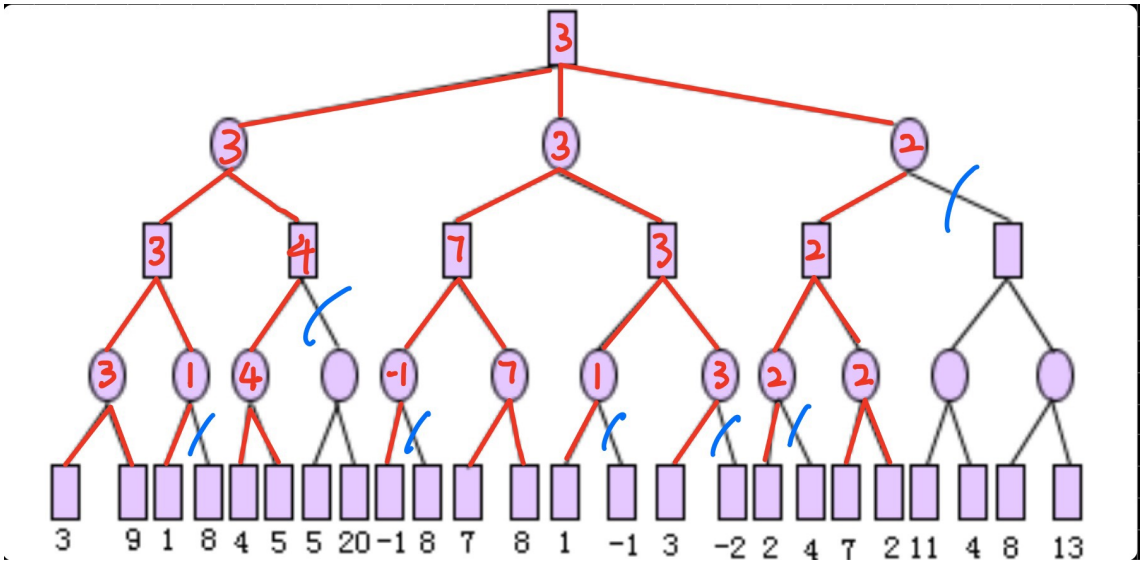

Figure 3: Q03: $\alpha - \beta$ *pruning tree.*