Part 1: Constraint Satisfaction Problems

Graduation Dinner

1. CSP Formulation:
   1. Variables
      1. J – Jasmine
      2. S – Jason
      3. T – Trudy
      4. R – Randy
      5. M – Misty
   2. Domains
      1. 1 – 5 where 1 is closest to kitchen
   3. Constraints
      1. Alldiff
      2. notAdjacent(J, S)
      3. S < J
      4. notAdjacent(M, S)
      5. notAdjacent(M, T)
      6. notAdjacent(M, R)
      7. |M – T| > 2
2. Arc Consistency:
   1. J : 3, 4, 5
   2. S : 1, 2, 3
   3. T : 1, 2, 4, 5
   4. R : 1, 2, 3, 4, 5
   5. M : 1, 2, 4, 5
3. R = 3 Arc Consistency:
   1. J : 4, 5
   2. S : 1, 2
   3. T : 1, 2, 4, 5
   4. R : 3
   5. M : 1, 5
4. R = 3 Solutions:
   1. T S R J M
   2. S T R J M

Hide & Seek

1. Simple Backtracking
   1. CSP Formulation
      1. Variables : v1, v2, … , vN
      2. Domains: {(X, Y) | X,Y ϵ [1, N]}
      3. Constraints
         1. Alldiff
         2. If ( vI=(X, yI) && vJ=(X, yJ) ) then tree=(X, yK) | yk ϵ (yI, yJ)
         3. If ( vI=(xI, Y) && vJ=(xJ, Y) ) then tree=(xK, Y) | yK ϵ (xI, xJ)
   2. Backtracking approach explained
   3. Number of attempted variable assignments
2. Heuristics
   1. Number of nodes expanded

Part 2: Minimax

Candy game