组合优化算法

Agenda
- Naspack Problem.
- Using Dynamic Programming.
- Travel Sales Man Problem (TSP)
- States and Value Space
- Ant Colony Algorithm. (and Greedy Algorithms)

▷ Naspack Problem

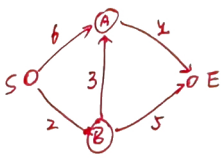
Using |Naspack| = W to take some of N things, to maximize $\sum_i v_i$

$W = \{w_1, \cdots w_N\}$ $V = \{v_1, \cdots v_N\}$

▷ DP: $f[i][C] = \max(f[i-1][C], v(i) + f[i-1][C-w[i]])$

$f_{(i,c)} = \max(f_{(i-1,c)}, v_i + f_{(i-1,c-w_i)})$;

▷ TSP:



for S

A	6
B	2
E	∞

for B

A	5
B	2
E	7

for A

A	5
B	2
E	6

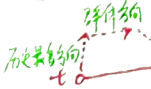
▷

2点假设 { ① 最优点更大概率邻近子较优点; ② 最优点有小概率分布在非优点附近;

▷

① (AC) 蚁群算法  最优 Path

② (GA) 遗传算法 i) 遗传: 组合较优分量; ii) 变异: 尝试非优分量;

③ (PSO) 粒子群算法 

④ (SA) 模拟退火算法 以 $1/\exp(\Delta D/T)$ 概率更新结果.