

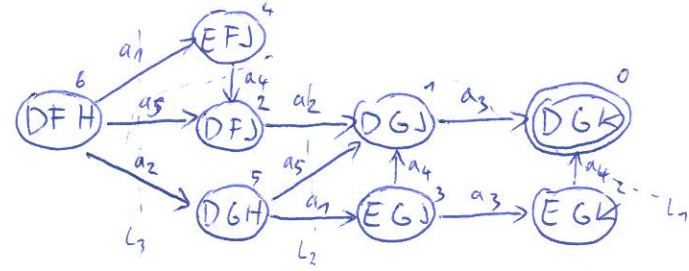
$A \in \{D, E\}$
 $B \in \{F, G\}$
 $C \in \{H, J, K\}$

INIT: $A=D, B=F, C=H$
 GOAL: $A=D, B=G, C=K$

ACTIONS: $a_1: D-H \rightarrow E-J$ COST=2
 $a_2: DF- \rightarrow DG-$ COST=1
 $a_3: -GJ \rightarrow -GK$ COST=1
 $a_4: E-- \rightarrow D--$ COST=2
 $a_5: --H \rightarrow --J$ COST=5

LP ENCODING OF HEURISTICS

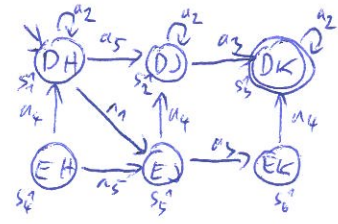
TRANSITION SYSTEM (NOT A JUSTIFICATION GRAPH!)



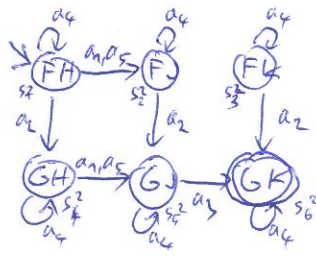
OPT.PATH:
 a_1, a_4, a_2, a_3
 a_2, a_1, a_3, a_4 } $h^* = 6$

ABSTRACTION OCP

$\alpha_1 = \Pi_{A,C}$
 $h_{A,C} = 5$



$\alpha_2 = \Pi_{B,C}$
 $h_{B,C} = 4$



LANDMARK OCP

LANDMARKS:
 $L_1 = \{a_3, a_4\}$
 $L_2 = \{a_2, a_5, a_1\}$
 $L_3 = \{a_2, a_4, a_5\}$

$h^{A+C} = 5 + 4 = 9$... NOT ADMISSIBLE AS α_1, α_2 NOT ORTHOGONAL!
 $h^{OPT} = h_A + h_B + h_C = 0 + 0 + 4 = 4$

OCP:

LP: $G^1 \leq S_1^1$
 $S_1^1 = 0$
 $S_2^1 \leq S_1^1 + a_1^1$
 $S_5^1 \leq S_1^1 + a_1^1$
 $S_1^1 \leq S_4^1 + a_4^1$
 \vdots
 $G^2 \leq S_6^2$
 $S_1^2 = 0$
 \vdots
 $a_1^1 + a_1^2 \leq 2$
 $a_2^1 + a_2^2 \leq 1$

	ϵ_1	ϵ_2
a_1	2	0
a_2	0	1
a_3	1	0
a_4	2	0
a_5	4	1

$h^{OCP} = 6$

MAX $L_1 + L_2 + L_3$

$L_1 \leq a_3^1$
 $L_1 \leq a_4^1$
 $L_2 \leq a_2^2$
 $L_2 \leq a_5^2$
 $L_2 \leq a_1^2$
 $L_3 \leq a_2^3$
 $L_3 \leq a_4^3$
 $L_3 \leq a_5^3$
 $a_1^1 + a_1^2 + a_1^3 \leq 2$
 $a_2^1 + a_2^2 + a_2^3 \leq 1$

	ϵ_1	ϵ_2	ϵ_3
a_1	0	1	0
a_2	0	1	0
a_3	1	0	0
a_4	1	0	0
a_5	0	1	0

$h^{OCP} = 2$

\nwarrow USE MORE LANDMARKS TO IMPROVE