

BACKTRACKING

→ DICT: RETRACE ONE'S STEPS

→ ALGO: GENERAL ALGO TO FIND ALL SOLUTIONS.

BACKTRACKING v/s DFS: "BACKTRACKING ALSO CALLED DFS" - KNUTH.

↑ GENERAL.

↑ TREE/GRAPH

DECISION

DP : GLOBAL OPTIMA

BACKTRACKING v/s RECURSION

ENUMERATION

GREEDY: LOCAL OPTIMA

CAR v/s DE LOREAN

OPTIMIZATION

→ MAY NOT LEAD TO GLOBAL OPTIMA

REC: CALLS ITSELF

BACKTR.: USES RECURSION TO EXPLORE ALL

ABANDONS BAD SOL.

POSSIBLE SOLUTION STATES.

EXPLORE'S ALL SPACE.

EXAMPLES: N QUEEN,
CSP etc

BACKTRACKING FINDS TO FORM
CANDIDATE SOLUTIONS INCREMENTALLY
THAT MIGHT LEAD TO GOAL STATES.

COMBINATION SUM

CANDIDATES: [2, 3, 5]

TARGET: 8

BACKTRACK(STATE, CANDIDATES)

IF (!IS-VALID(STATE))

RETURN

IF (IS-GOAL(STATE))

RESULT.ADD(STATE)

FOR C ∈ REMAINING
CANDIDATES

STATE.ADD(C)

BACKTRACK

(STATE, CANDIDATES)

STATE.REMOVE(C)

