LOCAL CONSISTENCY

CSE 511A: Introduction to Artificial Intelligence

NODE CONSISTENCY

- A node is node consistent if all its values satisfy its unary constraint
- Enforcement:
  - Loop through all nodes and remove values that do not satisfy the unary constraint
  - Runtime complexity = $O(nd)$,
    n = number of nodes, d = max domain size

ARC CONSISTENCY

- A constraint $c(v,w)$ is arc consistent if $\forall x \in v$: $\exists y \in w$ that satisfies the constraint and vice versa

- Enforcement: AC-3
  - Sometimes it is enough to prove infeasibility
  - Can also be used in conjunction with backtracking for early pruning

ARC CONSISTENCY

	AC-3
Correct it doesn't prune wrong values	Yes
Complete it terminates	Yes
Space Complexity max nodes in memory	$O(nd)$
Time Complexity max nodes expanded	$O(n^2d^3)$

number of nodes n
max domain size d