**Query-Guided Maximum Satisfiability**

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### An Emerging Trend

#### Hard vs. Soft

- **MaxSAT**
  - Applications domains:
    - MaxSAT
    - v2
    - Program Reasoning
    - v3
    - (e.g., v4 v5)
    - Bioinformatics
    - Information Programs
  - Solution: $v_2 = T, v_3 = T, v_4 = T, v_5 = T, v_6 = F, v_7 = F, v_8 = T$

### Example

**Iteration 1:**

- Program Reasoning:
  - Variables: $v_4$, $v_5$, $v_6$, $v_7$, $v_8$
  - Weight: $A = 100$
  - Solution: $v_4 = T, v_5 = T, v_6 = T, v_7 = T, v_8 = T$

**Iteration 2:**

- Program Reasoning:
  - Variables: $v_4$, $v_5$, $v_6$, $v_7$, $v_8$
  - Weight: $A = 100$
  - Solution: $v_4 = T, v_5 = T, v_6 = T, v_7 = T, v_8 = T$

**Iteration 3:**

- Program Reasoning:
  - Variables: $v_4$, $v_5$, $v_6$, $v_7$, $v_8$
  - Weight: $A = 100$
  - Solution: $v_4 = T, v_5 = T, v_6 = T, v_7 = T, v_8 = T$

New Challenge: gigantic instances with > 1 million variables and > 10 million clauses.