

Decision Procedures and Verification

Seminar 5

1. (1 point) Simulate algorithm DPLL(T) on the following formula:
 $((x_0 = y_0) \wedge (y_0 = x_1)) \vee ((x_0 = z_0) \wedge (z_0 = x_1)) \wedge \neg(x_0 = x_1)$
2. (1 point) Propose a decision procedure for the conjunctive fragment of Difference Logic with non-strict inequalities.

$$\begin{aligned} \textit{formula} &: \textit{formula} \wedge \textit{formula} \mid \textit{atom} \\ \textit{atom} &: \textit{identifier} - \textit{identifier} \textit{op} \textit{constant} \\ \textit{op} &: \leq \end{aligned}$$

3. (1 point) (Exhaustive theory propagation)
Let DP_T be a decision procedure for the conjunctive fragment of a theory T . Suggest a procedure for performing exhaustive theory propagation with DP_T .