STV: Model Checking for Strategies under Imperfect Information (Demo)

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1. **CHOOSE AN ACTION**

   STV is a tool for verification of Multi-Agent Systems. It does explicit-state model checking and addresses the state space explosion problem. STV offers:
   - model verification,
   - automated partial order reduction,
   - bisimulation - checking equivalence of models according to a defined relation of A-bisimulation.

2. **GENERATE MODEL(S)**

   STV includes several parameterized example models:
   - asynchronous: simple & two-stage voting, train-gate-controller;
   - synchronous: bridge end-play, castles, drones, Tian Ji.

   In a model specification file user can define:
   - local automata for the agent(s),
   - propositional variables,
   - persistent propositions,
   - agent names,
   - ATL formula.

3. **CHOOSE A MODEL TO VIEW:**

   - local automaton for each agent,
   - generated global and reduced models for POR,
   - side-by-side view of two (global) models for bisimulation-checking.

4. **EXPLORE MODEL(S)**

   GUI provides an intuitive interface with color-highlights for:
   - initial states,
   - winning strategy (if exists),
   - states satisfying given formula,
   - reduced model fragment,
   - pairs of bisimilar node subsets.

5. **VERIFY MODEL(S)**

   Given formula can be verified both on global and reduced models using:
   - fix-point approximation (upper/lower),
   - dominance-based strategy search (DominoDFS).

6. **ADJUST GRAPH SETTINGS**

   - The view can be panned and zoomed.
   - Labels with state or transition details can be shown by hovering over the target node/edge or toggled for the whole graph.