

Glucose_CommunitySwitching

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I. INTRODUCTION

Glucose_CommunitySwitching is a SAT Solver based on the solver Glucose[3].

This paper is described of Glucose_CommunitySwitching in SAT Competition 2015.

II. MAIN TECHNIQUES

Community Switching make use of community structure of SAT problems. Community Switching is following procedure.

- First, create a Variable Incidence Graph[1](VIG) from SAT problem(include learnt clauses).
- To detect the community of VIG, using Louvain method[2].
- To determine one target community to raise the priority of a search on the detected community.
- To raises VSIDS score of variables that belong to the target community at regular restart interval.
- To switch the target community at regular restart interval.
- To reconstruction VIG and detect the community of VIG at regular restart interval.

The pseudo code of community switching is exhibited in Figure ??.

```
loop {
  if (restart % COMMUNITY_RECONSTRUCT_INTERVAL == 0){
    vig = create_vig();
    communities = detect_community(vig);
  }
  if (restart % COMMUNITY_BUMP_INTERVAL == 0){
    target_community = next_community(communities);
    bump_vsids(target_community, VSIDS_BUMP_RATIO);
  }
  search();
  restart++;
}
```

Fig. 1. Pseudo code of community switching

III. MAIN PARAMETE

- COMMUNITY_RECONSTRUCTION_INTERVAL. An Interval for reconstruction of graph and community detection.
- VSIDS_BUMPS_RATIO. Parameters for raising the priority of search.(should be large)
- COMMUNITY_BUMP_INTERBAL. An Interval for switch the target community.

REFERENCES

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- [3] G. Audemard and L. Simon, “Glucose 2.3 in the SAT 2013 competition,” in *Proc. of SAT Competition 2013: Solver and Benchmark Descriptions*, 2013, pp. 42–43.