Glucose_CommunitySwitching

Hitoshi Togasaki
Graduate School of Information Science and Technology,
University of Tokyo, Japan

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 ??.

```plaintext
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 PARAMETER

- 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_INTERVAL. An Interval for switch the target community.

REFERENCES