Call for Papers: STTT Special Section on Graph-Based Tool Comparison

Pieter Van Gorp and Arend Rensink
p.m.e.v.gorp@tue.nl, rensink@cs.utwente.nl

November 11, 2008

Tools are crucial for the promotion of graph transformation in industry. Currently, a variety of tool environments exist for different graph transformation approaches. However, for potential users, working in application domains where graph transformation may be a useful technique, it is difficult to select the right tool for their purpose. Moreover, even the experience of many existing users does not extend beyond a few of the available tools. Finally, and maybe most importantly, the tool developers themselves can also be inspired by a more detailed understanding of related approaches.

Therefore, the graph transformation community organizes a yearly tool contest to compare the expressiveness, the usability and the performance of graph transformation tools along a number of selected case studies. The goal is to learn about the pros and cons of each tool considering different applications. A deeper understanding of the relative merits of different tool features will help to further improve graph transformation tools and to indicate open problems. After learning from two editions (Kassel in 2007, Leicester in 2008), the results should be published to other communities too. Moreover, the software related to the contest should be made accessible in a convenient manner.

1 Type of Contributions

A special section of the International Journal on Software Tools for Technlogy Transfer (STTT[1]) will contain articles related to the organization of the tool contest as well as a detailed description and comparison criteria for each case study. Moreover, this call solicits contributions related to:

- detailed descussions of one or more solutions to a case study,
- concrete evidence that previously published techniques matter in practice,
- degree of similarity between the solutions and the tools used,

[1] Journal homepage: http://sttt.cs.uni-dortmund.de/

- suggestions for improvement, based on observations from case solutions.

This call solicits contributions from the complete graph and model transformation communities and is not limited to extended submissions related to the tool contest. However, to promote direct comparisons between competing approaches, the special section does focus on the three case studies from the latest contest. Each case study involves specific issues:

- the *AntWorld* case study is oriented towards runtime performance of the rewriting engines [6]. Moreover, the ability to visualize results in an interactive manner is evaluated;
- the *Refactoring* case study is oriented towards the understandability of the transformation specifications [2]. This relates among other tool comparison criteria to textual versus graphical concrete syntax, support for regular expressions on paths in the left-hand sides of graph transformation rules, support for negative application conditions, explicit control flow modeling, domain-specific concrete syntax;
- the *ConferenceScheduling* case study (i.e., the *live* contest [1]) was primarily oriented towards the usability of the editors (e.g., the time needed to create the metamodel and the rewrite rules). In the context of this new call, this case study becomes non-live too: anyone interested can create a new solution or perfect an existing one. By means of extensions to the main problem description, it also relates to verification support and the flexibility and modularity of a solution.

2 Reproducibility: Electronic Tool Integration

In accordance with the journal tradition, authors are strongly *encouraged* to integrate their solutions using the STTT service platform jETI [3]. Moreover, all participants are *required* to prepare a Virtual Machine (VM) image (based on VirtualBox [4]) containing an optimally configured version of all tools that are required to run (and debug) a case study solution.

The virtual machines will be made accessible on a website that takes care of security, server load and the undoing of side-effects of previous visitors. The supportive web and server infrastructure will be constructed by the organizers. This VM approach is essential in the context of the AntWorld case study, since the visualization features of the tools under consideration cannot be reconstructed in a service oriented context without unrealistic effort. The approach may also be relevant for interactively executing refactoring solutions.

For the jETI integration approach, the services should have the following characteristics: in the case of refactoring, input programs (models) will be passed as GXL (see case description [2]) or XMI (see MoTMoT solution [5]) arguments to a jETI request. The service returns the GXL or XMI output program to the caller. Further checks (e.g., *"Are two solutions returning the same*

output for the requested refactoring operation on the input program?") should be performed client-side. Reference input/output GXL documents for refactoring are already available [2]. In the case of conference scheduling [1], a service should take as input an XML model describing a set of papers, presenters and chairs. As follows from the standard case description, the service should return an allocation of the papers to presentation time slots. The organizers can provide reference input/output XML documents based on the Alloy tool.

Finally, authors are free to propose novel tool integration mechanisms for graph transformation tools as well. For example, we encourage the construction of additional jETI services for checking the correctness of case solutions, visualizing the results, etc.

3 Important Dates

16/01/2009 Abstract submission, commitment to submit a paper

06/02 First submission of VM image

12/02 *[Organizers]* VirtualBox images available to all participants

13/02 *[Organizers]* jETI server online, *[Participants]* start testing of services

13/03 Full paper submission, VM image resubmission, service testing complete

08/05 *[Reviewers]* Major reviews complete

22/05 Final submission of papers and VM images

29/05 *[Organizers]* Final notification of acceptance

References

[1] Pieter Van Gorp. Grabats 2008 LiVE tool contest. http://www.fots.ua.ac.be/events/grabats2008/format.html#live, 2008.

[2] Berthold Hoffmann, Javier Pérez, and Tom Mens. A case study for program refactoring. http://www.fots.ua.ac.be/events/grabats2008/cases.html, 2008.

[3] Tiziana Margaria and Bernhard Steffen. jETI - the Java electronic tool integration platform. http://eti.informatik.uni-dortmund.de/, 2008.

[4] Sun Microsystems. Virtualbox. http://www.virtualbox.org, 2008.

[5] Olaf Muliawan, Bart Du Bois, and Dirk Janssens. Refactoring using JDT2MDR, an industrial based solution. http://www.fots.ua.ac.be/events/grabats2008/solutions.html.

[6] Albert Zündorf. The AntWorld simulation tool case. http://www.fots.ua.ac.be/events/grabats2008/cases.html, 2008.