YAHODA: verification tools database*

J. Crhová, P. Krčál, J. Strejček, D. Šafránek, P. Šimeček

Faculty of Informatics, Masaryk University Brno,
Czech Republic
{xcrhova,xkrcal,strejcek,xsafran1,xsimece1}@fi.muni.cz

Abstract. We present a web server YAHODA [9] which is aimed to serve as an information base for practical users and developers of verification tools, and also for researchers of the theoretical background. Several web sites already provide collective information related to the verification tools. In the paper we describe the organization of the database, its main features, currently available information and the maintenance of the repository.

1 Introduction

The need of a comprehensive information resource on verification tools has been reflected by several public sources [4, 5, 3]. There are specialized databases concerning Petri Nets [7, 6] or *HOL*-related tools [8]. See also the CONCUR project [10] that includes comparison of verification tools. However, most of those sources aimed at verification tools in general, are not well-structured and difficult to maintain. These databases often do not support the user in choosing the best tool according to the user's needs (the only exception is [6]). One must browse through all the tools and carefully read the info about each of them. Moreover, some of the databases, like [1, 2], are rather behind the times. It goes with the fact that the development in this area is very fast and it is difficult to keep the information up-to-date.

YAHODA [9] is a project that aims at overcoming at least some of the problems mentioned above. YAHODA is a web application based on a relational database. It is the tool developer, not the YAHODA administrator, who maintains the information about the tool via an authorized web access. This is the most effective way of fighting the inaccuracy. The information in the database is structured and thus allows the YAHODA user more flexible search for required information. At the same time, YAHODA provides some basic taxonomy.

* This work has been partially supported by the Grant Agency of Czech Republic, grant No. 201/00/1023.

2 Information in YAHODA

In this section, we describe how the information which can be kept in YAHODA is organized. Information about tools are logically divided into four groups – functionality of the tool, technical information, last release and contact information (Table 1, Fig 1).

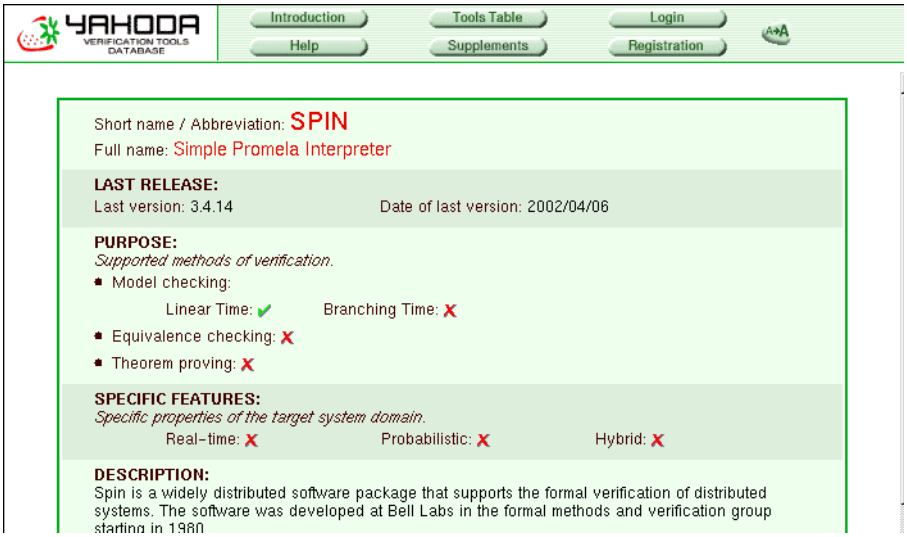

Fig. 1. Detailed information about a tool

Moreover supplementary information about logics, equivalences, and modelling languages used by the tools can be added. It consists of a brief description and references to the literature.

3 Searching in YAHODA

The most important feature for the users of YAHODA is the support of quick and transparent search in the database.

All tools and their main features are displayed in graphical table, so called *tools table* (Fig. 2). The user can set some requirements on the tools concerning purpose of the tool, specific features such as real-time verification, probabilistic verification or verification of the hybrid systems, information about the graphical interface, availability of the tool and the platforms for which the tools are available. Requirement (called filtering

Functionality information	
Purpose of the tool	model checking, equivalence checking, theorem proving
Specific features	real-time verification, probabilistic verification or verification of the hybrid systems
Graphical interface	graphical user interface, graphical specification of the system, graphical simulation or graphical tracing features
Description	a word description of the tool
Specification languages	languages for specification of the system
Logics	logics used by the tool (only for model checkers)
Equivalences	equivalences checked by the tool (only for equivalence checker)
Counterexample	generation and visualization of the counterexample
Technical information	
Availability of the tool	free, commercial, or free under specific conditions
Availability of the source code	
Programming languages	programming languages in which the tool has been developed (only if the source code is available)
Platforms	platforms for which the tool is available
Last release information	
Last version	number of the last version
Date of the last version	
Contact information	
Tool's homepage	
Tool's (author's) email address	
Other links	

Table 1. Description of the structure of the database

query) consists of the column names of the tools table connected by the Boolean operators (Fig. 2). The user can choose them by clicking on the corresponding hypertextual column names and symbols of the Boolean operators. Tools table consists of tools satisfying the requirements only.

4 Maintaining records in YAHODA

To cope with the inaccuracy and the obsoleteness of the information we decided to open the database to the authors of the tools. Authors can add their tools into the database and maintain their records on their own (Fig. 3). Thus, after any modification of the tool, the author does not need to wait for the database administrator to update tool's record.

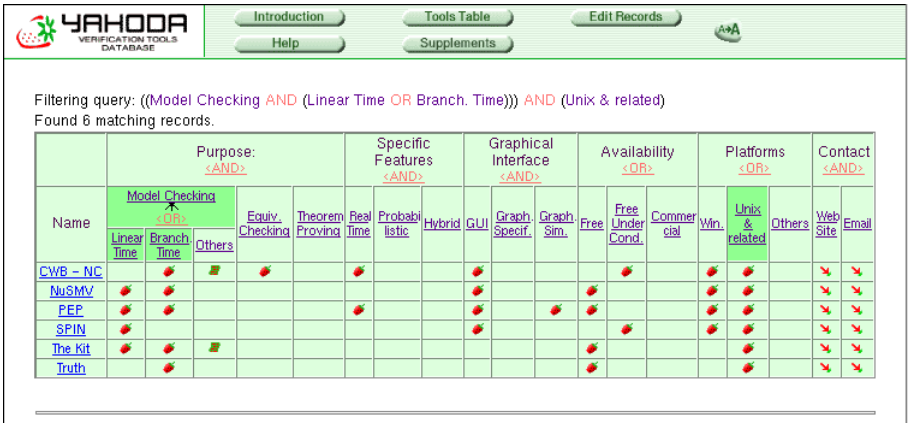

Fig. 2. Tools table

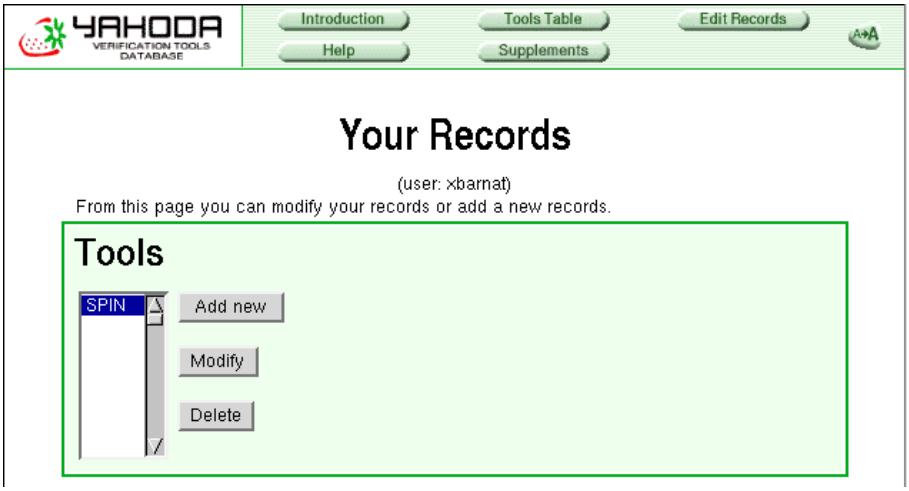

Fig. 3. Maintaining records

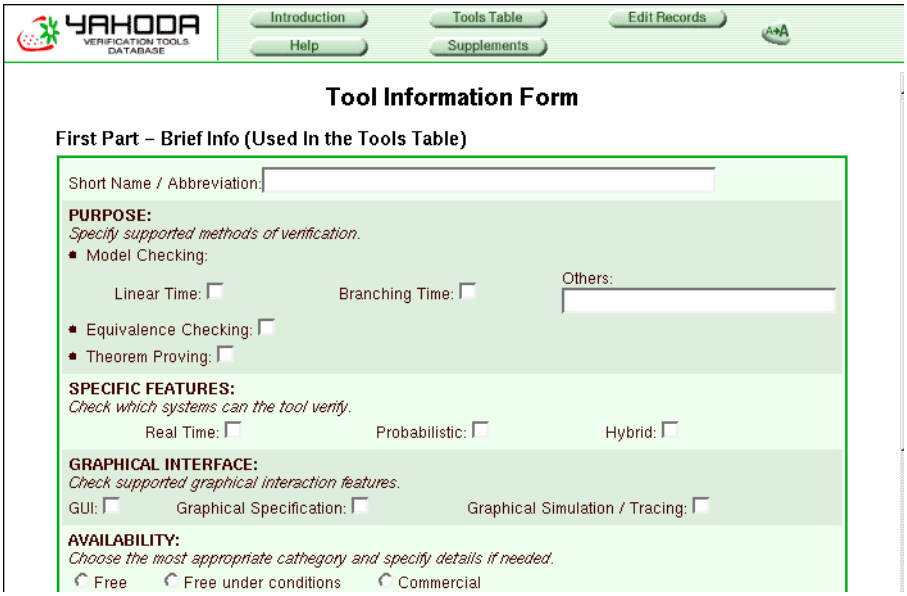

Fig. 4. Adding new tool

To obtain an authorized access, authors of a tools should register for YAHODA. This can be done by filling authors' name and email address into the registration form. Administrators of the database will create authors' accounts and will send them a login and password immediately. Now the authors can create new records for the tools and enter all information about them (Fig. 4). Moreover they can update this information any time in the future.

5 Conclusion and future plans

We described the database of verification tools YAHODA and showed how it is organized. Further, we described the main features of this database.

We intend to start YAHODA with the most famous tools carefully filled in and checked by their authors. As a demonstration we intend to use the data of the Tools Day accepted tools. After this, we will challenge all tools' authors to fill in their own tools.

Moreover, we are prepared to modify the database design, according either to external requests or to the development in the verification tools area. In general, we challenge all the users to send us their comments and suggestions how to improve the database.

Our objective is to make YAHODA broadly known and stimulate other authors of tools to present their work here.

Acknowledgments: We want to thank our colleagues who participated in the work on YAHODA, especially Luboš Brim, Ivana Černá, Jan Obdržálek, and Radek Pelánek.

References

1. BRICS tools home page.
   http://www.brics.dk//users/btools/index.html.
2. Database of existing mechanized reasoning systems.
   http://www.calculemus.org/MathUniversalis/3/listsoft.html.
3. Formal methods.
   http://www.afm.sbu.ac.uk/.
4. Formal methods education resources, tool pages.
   http://www.cs.indiana.edu/formal-methods-education/Tools/.
5. Formal methods europe.
   http://www.fmeurope.org/.
6. The petri net tools survey.
   http://home.arcor-online.de/wolf.garbe.petrisoft.hml.
7. Petri Nets tool database.
   http://www.daimi.au.dk/PetriNets/tools/db.html.
8. Systems related to HOL.
   http://www.cl.cam.ac.uk/Research/HVG/HOL/HOL.html#related.
9. Yahoda.
   http://anna.fi.muni.cz/yahoda/.
10. Eric Madelaine. Verification tools from the CONCUR project. *EATCS Bulletin*, 47:110–120, 1992.