YAHODA: verification tools database*

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Abstract. We present a web server YAHODA [9], which is designed to provide unified information about currently available verification tools. The server software allows the tools developers to insert and maintain the information about their tools by their own. In the paper we describe the organization of the database, its main features, and the maintenance of the repository.

1 Introduction

The need of a comprehensive information resource on verification tools has been already 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 therefore 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. We hope 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 desired information. At the same time, YAHODA provides some basic taxonomy.

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2 Information in YAHODA

In this section, we describe the structure of database records.

The amount of information to be stored is set up to be general enough on one hand (e.g., for searching and comparing tools), on the other hand we tried to include all the necessary details.

Every tool record includes the following information:

Purpose of the tool – the purpose of the tool is basically characterized as (combination of) *model checking (linear or branching time), equivalence checking, or theorem proving.*

Specific features – the distinguished specific features are *real-time verification, probabilistic verification or verification of the hybrid systems.*

Graphical interface – recognized graphical features are *graphical user interface, graphical specification of the system, graphical simulation.*

Description – a word description of the tool.

Modelling languages – languages for specification of systems.

Logics – logics used by the tool (only for model checkers).

Equivalences – equivalences checked by the tool (only for equivalence checkers).

Counterexample – distinguished features are generation and possible visualization of the counterexample.

Availability – the basic categories are *free, commercial, or free under specific conditions.* In the last case, the conditions can be explicitly added. *Availability of the source code* can be checked and *developing languages* can be specified.

Platforms – platforms for which the tool is available. The basic categories are *Unix* and *Windows.*

Last release – number and date of release of last available version are specified.

References – homepage and email of the tool are specified. Other relevant links can be added.

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

The Fig. 1 shows the presentation of the tool record in YAHODA.

3 Searching in YAHODA

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

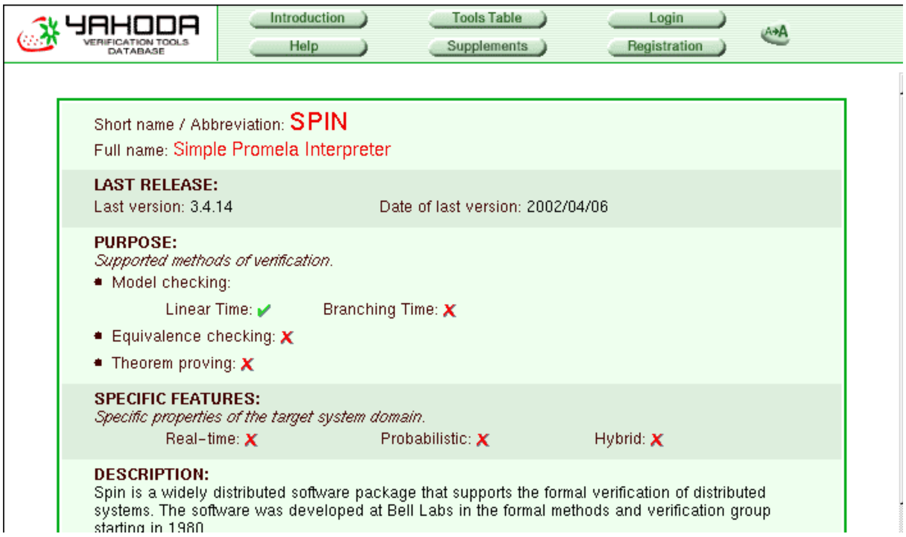

Fig. 1. Detailed information about a tool

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 (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 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 requirement only.

Users can get the detailed information about tool by clicking on the tool name in the tools table.

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 (via the authorized access). Thus, after any modification of the tool, the author does not need to wait for the database administrator to update the tool's record.

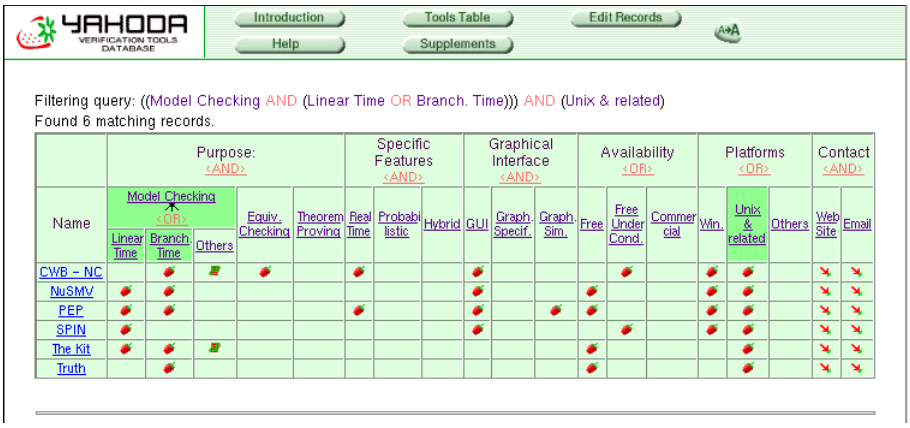

Fig. 2. Tools table

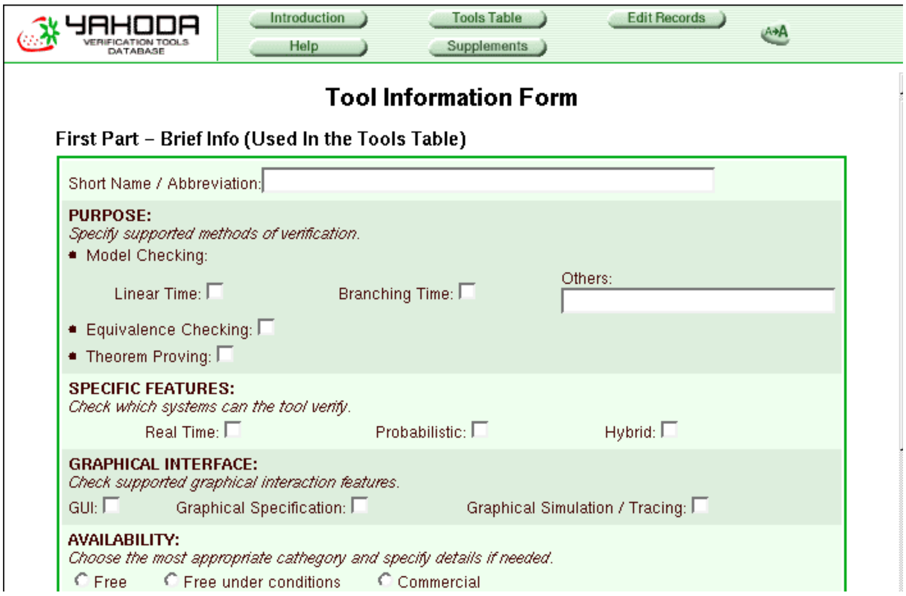

Fig. 3. Adding new tool

To obtain an authorized access, authors of tools should register to YAHODA. This can be done by filling authors' name and email address into the registration form. The server automatically creates authors' accounts and will send them a login and password immediately. Now the authors can insert new records of the tools by filling the form (Fig. 3). 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 information about the tools presented at the Tools Day. After this, we will challenge all other tools' authors to add their tools to YAHODA.

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 are asking all the users to send us their comments and suggestions how to improve the server.

Our objective is to make YAHODA a comprehensive source containing up-to-date information about verification tools.

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