

jInfer AutoEditor Module Description

Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, Matej Vitásek
Advisors: RNDr. Irena Mlýnková, Ph.D., Martin Nečaský, Ph.D.

Praha, 2011

Target audience: developers willing to extend jInfer, specifically alter displaying of automata .

Responsible developer:	Mário Mikula
Required tokens:	org.openide.windows.WindowManager
Provided tokens:	none
Module dependencies:	Base JUNG
Public packages:	cz.cuni.mff.ksi.jinfer.autoeditor cz.cuni.mff.ksi.jinfer.autoeditor.automatonvisualizer cz.cuni.mff.ksi.jinfer.autoeditor.automatonvisualizer.layouts cz.cuni.mff.ksi.jinfer.autoeditor.gui.component

1 Introduction

This is an implementation of a *AutoEditor*. Using JUNG library, it provides an API to display and user interactively modify automata, so the process of inference can be easily made user interactive.

2 Structure

Structure of *AutoEditor* can be divided into following 3 main parts.

- API - API to display automaton in GUI.
- Base classes - Classes providing basic functionality that can be extended and combined to achieve desired visualization of an automaton.
- Derived classes - Classes derived from the base classes that are used in existing modules and simultaneously serve as examples.

First, base classes and a creation of automaton visualization will be described.

2.1 Base classes

Main two classes representing visualization of automaton are *Visualizer* and *AbstractComponent*. *Visualizer* is a graphical representation of automaton and *AbstractComponent* is a panel (extends *JPanel*) containing the *Visualizer* which will be displayed in GUI. TODO obrazok ako AC dedi od *JPanelu* a obsahuje *Visualizer*.

2.1.1 Visualizer

TODO translate

Trieda *Visualizer* dedi od *JUNG*oveho *VisualizationViewer*, takže poskytuje všetky jeho metódy a navyše podporu pre uloženie automatu do obrázku - metódy *saveImage()* a *getSupportedImageFormatNames()*. Pre uloženie obrázku však tieto metódy nie je nutné volať, pretože *AutoEditor* GUI obsahuje tlačidlo na uloženie prave vykresleného automatu do obrázku (viz ďalej).

Constructor method bere ako argument instanciu triedy *Layout*. Viac informácií o tejto triede a jej použitie v kapitole TODO ref.

TODO obrazok ako *Visualizer* dedi od *VisualizationVieweru* a obsahuje *Layout*.

2.1.2 AbstractComponent

TODO translate

Trieda `AbstractComponent` je panel v ktorom bude vykresleny automat, presnejsie `Visualizer` reprezentujuci nejaký automat. Dedi od triedy `JPanel`, takže poskytuje všetky jej metódy a správanie. Navyše poskytuje metódy `setVisualizer()` `getVisualizer()` `waitForGuiDone()` `guiDone()` `guiInterrupt()` `guiInterrupted()` a abstrakt metódu `getAutomatonDrawPanel()`

Purpose tejto triedy je rozšíriť ju a poskladať si panel aký sa hodi (tlacitka, napisy, ...) s tým, že musí obsahovať aspoň jeden `JPanel`, v ktorom bude vykreslený nastavený `Visualizer`. Účel metódy `getAutomatonDrawPanel()` je vrátiť tento `JPanel`, aby `AutoEditor` vedel, kam má ten `Visualizer` vykresliť.

Ak je žiadaný user interaktivita, je nutné si podporu pre ňu zahrnúť práve do tejto triedy. Pre viac informácií viz TODO ref.

`Visualizer` sa nenastavuje v konštruktoze z toho dôvodu, že často je žiaduce, aby sa na rovnakom paneli kreslilo postupne viac rôznych automatov. Na to nie je nutné vyrábať novú instanciu, ale stačí na jednej instancii volať `setVisualizer()`.

2.2 API

API AE je veľmi jednoduché. Trieda `AutoEditor` poskytuje tieto 3 statické metódy.

`drawComponentAsync()` `drawComponentAndWaitForGUI()` `closeTab()`

2.3 Derived classes

`StatePickingVisualizer` `StatesPickingVisualizer`

2.4 GUI

TODO

tlacitka

2.5 Preferences

TODO

All settings provided by *BasicXSDExporter* are project-wide, the preferences panel is in `cz.cuni.mff.ksi.jinfer.basicxsd.properties` package. As mentioned above, it is possible to set the following.

- Turn off generation of global element types. Turning off this feature is not recommended as it may cause certain problems with validity of resulting XSD. See ??.
- Minimal number of occurrences of element to define its type globally. (Only if generation of global elements is active.)
- Number of spaces in output per one level of indentation.
- Global type name prefix. It is a string which will be inserted before a name of a type, which is derived from element's name. Can be also an empty string. (Only if generation of global elements is active.)
- Global type name suffix. It is a string which will be appended after a name of a type, which is derived from element's name. Can be also an empty string. (Only if generation of global elements is active.)

References

- [Aho96] H. Ahonen. *Generating grammars for structured documents using grammatical inference methods*. PhD thesis, Department of Computer Science, University of Helsinki, Series of Publications A, Report A-1996-4, 1996.
- [Bou] Ronald Bourret. Dtd parser, version 2.0. <http://www.rpbouret.com/dtdparser/index.htm>.
- [HMu01] John E. Hopcroft, Rajeev Motwani, and Jeffrey D. Ullman. *Introduction to Automata Theory, Languages, and Computation (2nd Edition)*. Addison-Wesley, 2001.
- [HW07] Yo-Sub Han and Derick Wood. Obtaining shorter regular expressions from finite-state automata. *Theor. Comput. Sci.*, 370(1-3):110–120, 2007.
- [jun] Java universal network/graph framework. <http://jung.sourceforge.net/>.
- [KMS⁺a] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer Architecture*.
- [KMS⁺b] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer AutoEditor automaton visualization and editor module*.
- [KMS⁺c] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer Base Module Description*.
- [KMS⁺d] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer BasicDTDExporter Module Description*.
- [KMS⁺e] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer BasicIGG Module Description*.
- [KMS⁺f] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer BasicRuleDisplayer Module Description*.
- [KMS⁺g] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jinfer javadoc*. <http://jinfer.sourceforge.net/javadoc>.
- [KMS⁺h] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer TwoStep simplifier design and implementation*.
- [log] Apache log4jTM. <http://logging.apache.org/log4j/>.
- [loo] org.openide.util.class lookup. <http://bits.netbeans.org/dev/javadoc/org-openide-modules/org-openide/modules/doc-files/api.html>.
- [mod] Module system api. <http://bits.netbeans.org/dev/javadoc/org-openide-modules/org-openide/modules/doc-files/api.html>.
- [Nor] Theodore Norvell. A short introduction to regular expressions and context free grammars. <http://www.engr.mun.ca/~theo/Courses/fm/pub/context-free.pdf>.
- [VMP08] Ondřej Vošta, Irena Mlýnková, and Jaroslav Pokorný. Even an ant can create an xsd. In *DASFAA'08: Proceedings of the 13th international conference on Database systems for advanced applications*, pages 35–50, Berlin, Heidelberg, 2008. Springer-Verlag.
- [wik] Regular expression. http://en.wikipedia.org/wiki/Regular_expression.