

USER GUIDE FOR OPENMATH BROWSER DEMO

Ivelina Stoyanova, University of Bath, May 2010

June 30, 2010



1 Introduction

OpenMath Browser is an application developed in java for reading and displaying mathematical expressions presented in OpenMath XML format. The main purpose of the application is to allow the user to display large expressions in a summarised form facilitating their reading and understanding. The summarisation allows the user to view the abstract structure of the expression. The application then offers the possibility to expand any or all of the subexpressions and to vary the degree of details shown.

OpenMath Browser is developed as part of my Final Year Project "Intelligent summarising and browsing of mathematical expressions" under the supervision of Prof. James Davenport, Department of Computer Science, University of Bath, 2010.

OpenMath Browser Demo is a java applet which implements most of the functionalities of the stand-alone application.

2 Get started

You need to enable java and javascript in your browser's settings. Also, for some functionalities you will need popup windows.

3 Usage and prerequisites

OpenMath Browser allows loading, parsing and displaying mathematical expressions in OpenMath 2.0 XML format (<http://openmath.org>). Its main functionalities are related to summarising and browsing of mathematical expressions.

It aims at representing the expression in a form which is easier to understand where the abstract structure of the expression can be observed and then the user can control the way the details are revealed.

Some prior general knowledge of OpenMath may be necessary, please refer to <http://openmath.org>, as well as some basic definitions such as tree as a data structure, height of a tree, etc.

4 Functionalities

There are four content tabs:

- Display (where the image representing the expression is displayed);
- OpenMath (where the OpenMath - XML text is displayed with proper indentation);
- Latex tab (with the Latex code for the image in Display);
- Info (where additional information, e.g. this user guide, is displayed).

Some explanations on functionalities of OpenMath Browser follow.

4.1 Reading and parsing OpenMath input

A set of examples is available to the user to load from Open Examples menu on top, or alternatively some OpenMath text can be written/pasted in the OpenMath tab (press UpdateOM button to confirm). The input is parsed and the corresponding image representing the expression is displayed, as well as OpenMath text and LaTeX code in corresponding tabs. The expression is rendered via LaTeX.

4.2 Options for the display

There are some default options for display which the user is free to change by checking/unchecking relevant boxes or varying the values.

These options are as follows:

- Use colour - when summarising colours can be used to distinguish between different labels - default is off
- Suppress first occurrence - when summarising the first occurrence of repeated expressions can be substituted by a label or left in full in a box with the label as a subscript - default is off (i.e. left in full)
- Symbol in label - the labels can contain the name of the operation of the expression - default is off
- Catalogue variables - (not useful at the moment) related to substitution
- Maximum number of arguments in display - any expression with more arguments is considered too long and is replaced by a label; can take values between 3 and 20, or 100 - default is 10 (e.g. a sum of 11 numbers is considered too long)
- Maximum height in display - any expression with a greater height is considered too complicated and is replaced by a label; can take values between 1 and 20, or 100 - default is 10 (e.g. 11 nested square roots present a complicated expression)

4.3 Buttons Summarise all / Expand all

Perform full summarisation / expansion of the expression according to the options. Long expressions are still summarised if values for the number of arguments is set to a small number.

4.4 Customised summarisation / expansion

Customised allows the user to choose particular expressions to summarise / expand while leave others. You can also use these buttons to apply changes in the options but preserving the already expanded / summarised expressions.

5 Contact details

Please feel free to contact the author, Ivelina Stoyanova, with any ideas, comments, suggestions, or report bugs.

Email: i.stoyanova@alumni.bath.ac.uk