The LaTeX-access manual

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March 12, 2011

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Latex-access – provides a blind person with a more efficient means of interacting with LaTeX in mathematical and scientific documents.

Chapter 1

Introduction

The latex-access project is designed to provide a realtime translation of a line of LaTeX in to braille, concentrating on the Nemeth code, whichh can be read on a refreshable braille display. This will greatly improve the ease of use of LaTeX to blind mathematicians and scientists. The project also translates the current line into english speech which is easier to listen to than LaTeX source.

Note that this project is largely aimed at people wishing to read LaTeX using a refreshable braille display and/or speech synthesisor[B, and people who will probably want to edit LaTeX documents. For example, as a university student, I receive my worksheets in LaTeX format, and produce my work using LaTeX. Using the latex_access package, I am able to get a fairly good translation of the question and then an on-the-fly translation of my work as I produce it. If you are not concerned with editing LaTeX documents and simply want a braille translation of an entire laTeX document, then this project is not for you.

There is also a very low traffic mailing list, which is worth subscribing to if you have any queries, problems, suggestions or ideas. All current developers are subscribed to this list and are very willing to assist. To subscribe send an email with the word "subscribe" in the subject to: latex-access-devel-request@lists.sourceforge.net. To post to the list send emails to latex-access-devel@lists.sourceforge.net

1.1 Purpose

It is widely thought that LaTeX is a good system for a blind mathematician or scientist to use to create and read scientific documents, as it is a linear code and so the user does not have to perceive two-dimensional concepts, such as

fractions and column vectors. By reading this linear code, a blind person can take in and understand scientific documents in the same way that a sighted person would do by studying a printed document. It should be noted that normally, laTeX is just a source from which documents are converted in to an attractive-looking, typeset document that can be printed or viewed on screen, often in a .pdf, .dvi or .ps format. For various technical reasons, documents in such formats are currently inaccessible with current screen-reading technology. The best current solution therefore is not to concern ourselves with documents in these formats, but rather to read and interpret the LaTeX source code itself.

1.2 Reading a LaTeX document

It is entirely possible to read a LaTeX document simply by reading the LaTeX source itself. This however, is often a time-consuming and pain-staking process, and it is often not particularly nice to read. For example, the LaTeX source for the quadratic formula is
$$x=\frac{-b\pm\sqrt{b\hat{2}-4ac}}{2a}$$
It is therefore the aim of the project to translate a line of LaTeX in to a line of Niemeth braille code, which can be read using a refreshable braille display. The project also aims to provide an audible translation of the LaTeX source which will be output through current screen-reading technology.

1.3 Current features

latex-access currently contains the following features.

- Translation of several mathematical expressions from LaTeX to Niemeth braille. These include, but are not confined to:
  - Translation of fractions, both numerical and algebraic.
  - Translation of trigonometric functions and hyperbolic functions.
  - Translation of powers, including square roots.
  - Translation of expressions used in calculus, including partial derivatives.
  - Translation of two component and three component column vectors, not in to Niemeth braille format but in to a row vector so that they can be read on a single line braille display.

  - Translation of several mathematical symbols, such as the Greek letters.
  - Many commands used to create a visually attractive document are either translated or ignored, often it is not necessary to see some formatting commands.

- Translation of several of the above to audible speech.
- A matrix browser feature to enable easier reading of larger matrices in LaTeX, see the description below.
- Support for custom defined LaTeX commands.

Chapter 2

Obtaining the source

The package is hosted by svn at, `https://latex-access.svn.sourceforge.net/svnroot/latex-access`.

This link will take you to a web interface of the svn tree, but you'll probably want to checkout the code so you can install it. If you run windows see section section2.2, and if you run linux see section section2.1.

2.1 Linux

Under Linux, the standard subversion command line client works well. This can usually be installed on debian based distros by running
apt-get install subversion
(as root)

Then type
svn co https://latex-access.svn.sourceforge.net/svnroot/latex-access latex-access

This will check the package out into the directory latex-access.

In future feel free to run "svn up", to pull the latest updates from the server. (from within the latex-access directory).

2.2 Windows

On windows the "Tortoise SVN" client works well.
`http://tortoisesvn.tigris.org/`

Once you have checked out the sourcecode from
`https://latex-access.svn.sourceforge.net/svnroot/latex-access`
continue with the installation process.

Note, you should periodically pull the latest updates from the server to get the latest and greatest features of latex-access.

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