

mathanno.sty: Annotation Macros for Math Expressions

Deyan Ginev
Jacobs University, Bremen
<http://kwarc.info/dginev>

March 30, 2012

Abstract

This package provides macros for annotating L^AT_EX-authored mathematical expressions, with a focus on structural and syntactic properties.

Contents

1	Introduction	2
2	User Interface	2
3	Exhaustive Feature List	2
4	Implementation	2

EdN:1

EdN:2

1 Introduction

1

2 User Interface

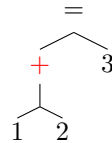
2

```
\documentclass{article}

An annotation for $1+2=3$:
@=(@+(1,2)) ???
=====
First try: $1+2\is{infix,relation,expression}{=}3$
```

Figure 1: Example of a Basic Annotation

Linear: 1 + 2=3
Tree:



3 Exhaustive Feature List

4 Implementation

We proceed to doing the actual work on the L^AT_EX side of affairs.
To start things off, we provide Tikz-based tree building macros.

```
1 \<package>
2 \usepackage{color}
3 \usepackage{qtree}
4
5 % PDF annotation internals:
6 \def\tooltiptarget{\phantom{\rule{1mm}{1mm}}}
7 \newbox\tempboxa
8 \setbox\tempboxa=\hbox{}
9 \immediate\pdfxform\tempboxa
10 \edef\emptyicon{\the\pdflastxform}
11
```

¹EDNOTE: we need this for the arXiv case study.
²EDNOTE: talk about keywords, trees, tikz

```

12 % Magic for ,
13 \begingroup
14 \lccode'\~='\",%
15 \lowercase{\endgroup}%
16 \def~{\string\r}%
17 }%
18
19 \def\activatecomma{\begingroup\catcode',=\active}
20 \def\deactivatecomma{\endgroup}
21 \def\MathTree{\Tree}
22
23 \def\TreeOp#1#2{%
24 \begingroup
25 \edef\boxname{\csname #1box\endcsname}%
26 \global\expandafter\newsavebox\boxname%
27 \global\expandafter\setbox\boxname=\hbox{\frame{\scriptsize #2}}%
28
29 \expandafter\xdef\csname #1\endcsname{\expandafter\usebox\csname #1box\endcsname}%
30 \endgroup
31 }
32
33 % Annotation macro:
34 \def\is{\activatecomma\annoi}
35 \def\isa{\is}
36 \newcommand\annoi[2]{%
37 \pdfstartlink user{%
38   /Subtype /Text
39   /Contents (#1)
40   /AP <<
41     /N \emptyicon\space 0 R
42   >>
43 }%
44 {\color{red}#2}%
45 \pdfendlink%
46 \deactivatecomma
47 }
48
49 \newcommand{\labelentry}{.}
50 \newcounter{entryi}
51 %%% ENTRIES for expression case study:
52 \newenvironment{nextentries}[2]%
53 {\begin{table}[hp]\def\capentries{#1}\def\labelentries{#2}%
54 \begin{tabular}{|l|l|l|}\hline & Expression & Denotation & Annotation \\\%
55 \hline\end{tabular}\caption{\capentries\label{\labelentries}\end{table}}%
56
57 \newenvironment{entries}[2]%
58 {\setcounter{entryi}{1}\begin{nextentries}{#1}{#2}}
59 {\end{nextentries}}
60
61 \newcommand\entry[4]{\hline\[-4mm] {\theentryi\labelentry}\stepcounter{entryi} & #1 & #2 & {\s

```

62 $\langle \text{package} \rangle$