Natural Language Engineering LaTeX Supplement

CAMBRIDGE TeX-TO-TYPE

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Abstract

This guide is for authors who are preparing papers for the *Natural Language Engineering* journal using the LaTeX document preparation system and the CUP NLE style file.

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1 Introduction

The layout design for the *Natural Language Engineering* journal has been implemented as a LaTeX style file. The NLE style file is based on the ARTICLE style as discussed in the LaTeX manual. Commands which differ from the standard LaTeX interface, or which are provided in addition to the standard interface, are explained in this guide. This guide is not a substitute for the LaTeX manual itself.

1.1 Introduction to LaTeX

The LaTeX document preparation system is a special version of the TeX typesetting program. LaTeX adds to TeX a collection of commands which simplify typesetting by allowing the author to concentrate on the logical structure of the document rather than its visual layout.

LaTeX provides a consistent and comprehensive document preparation interface. There are simple-to-use commands for generating a table of contents, lists of figures and/or tables, and indexes. LaTeX can automatically number list entries, equations, figures, tables, and footnotes, as well as parts, chapters, sections and subsections. Using this numbering system, bibliographic citations, page references and cross references to any other numbered entity (*e.g.* chapter, section, equation, figure, list entry) are quite straightforward.

1.2 The NLE Document Style

The use of document styles allows a simple change of style (or style option) to transform the appearance of your document. The CUP NLE style file preserves the standard LaTeX interface such that any document which can be produced using the standard LaTeX ARTICLE style can also be produced with the NLE style. However,

the measure (or width of text) is slightly different from that for ARTICLE, therefore line breaks will change and it is possible that equations may need re-setting.

2 Using the NLE style

First, copy the file `NLE.sty` into the correct subdirectory on your system. The NLE document style is implemented as a complete document style, *not* as a document style option. In order to use the NLE style, replace `article` by `nle` in the `\documentstyle` command at the beginning of your document:

```
\documentstyle{article}
```

is replaced by

```
\documentstyle{nle}
```

None of the standard document style options should be used.

3 Additional facilities

In addition to all the standard LaTeX design elements, the NLE style includes the following feature:

- Extended commands for specifying a short version of the title and author(s) for the running headlines.

Once you have used this additional facility in your document, do not process it with a standard LaTeX style file.

3.1 Titles and authors' names

In the NLE style, the title of the article and the author's name (or authors' names) are used both at the beginning of the article for the main title and throughout the article as running headlines at the top of every page. The title is used on odd-numbered pages (rectos) and the author's name appears on even-numbered pages (versos). Although the main heading can run to several lines of text, the running head line must be a single line. Moreover, the main heading can also incorporate new line commands (*e.g.* \\) but these are not acceptable in a running headline. To enable you to specify an alternative short title and author's name, the standard `\title` and `\author` commands have been extended to take an optional argument to be used as the running headline:

```
\title[A short title]{The full title which can be as long
 as necessary}
\author[Author's name]{The full author's name, followed by\\
 the affiliation if necessary}
```

The following example is taken from Abadi et al. (1991) and shows several authors and their affiliations.

```
\title{Explicit substitutions}
\author[M. Abadi and others]
 {M.\ns A\ls B\ls A\ls D\ls I,\ns
  L.\ns C\ls A\ls R\ls D\ls E\ls L\ls L\ls I\\
 Digital Equipment Corp., Systems Research Center,\\
 130 Lytton Avenue, Palo Alto, California, USA 94301
 \and
 P.-L.\ns C\ls U\ls R\ls I\ls E\ls N\\
 Laboratoire d'Informatique, Ecole Normale Sup'erieure,
 45 Rue d'Ulm 75005, Paris, France
 \and
 and\ns J.-J.\ns L\ls \'E\ls V\ls Y\\
 INRIA, Domaine de Voluceau, Roquencourt, B.P.105, 78153,
 Le Chesnay, Cedex, France.}
```

Notice the use of the predefined macros `\ls` and `\ns` to letter-space the author's name. As you can see from this example, when there are four or more authors, the short author name argument should contain the first authors name followed by the text 'and others'.

3.2 Abstract

The NLE style provides for an abstract which is produced by the following commands

```
\begin{abstract}
  ...
\end{abstract}
```

3.3 Lists

The NLE style provides the three standard list environments.

- Bulleted lists, created using the `itemize` environment.
- Numbered lists, created using the `enumerate` environment.
- Labelled lists, created using the `description` environment.

3.4 Footnotes

The NLE journal style uses superior numbers for footnote references.[1]

4 Some guidelines for using standard facilities

The following notes may help you achieve the best effects with the NLE style file.

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[1] This shows how a footnote is typeset.

4.1 Sections

LATEX provides five levels of section headings and they are all defined in the NLE style file:

- `\section.`
- `\subsection.`
- `\subsubsection.`
- `\paragraph.`
- `\subparagraph.`

Section numbers are given for sections, subsection and subsubsection headings.

4.2 Running headlines

As described above, the title of the article and the author's name (or authors' names) are used as running headlines at the top of every page. The title is used on odd-numbered pages (rectos) and the author's name appears on even-numbered pages (versos).

The `\pagestyle` and `\thispagestyle` commands should *not* be used. Similarly, the commands `\markright` and `\markboth` should not be necessary.

4.3 Tables

The `figure` and `table` environments are implemented as described in the LATEX Manual to provide consecutively numbered floating inserts for illustrations and tables respectively. The standard inserts and their captions are formatted centred. Line breaks in captions can be inserted as required using \\.

The NLE style file will cope with most positioning of your tables and you should not normally use the optional positional qualifiers on the `table` environment which would override these decisions. Normal journal style sets the table caption first, followed by a double rule, the table body and a double rule at the bottom. Single rules and spanner rules (`\cline`) can be used to separate headings from the columns. For example, Table 1 is produced using the following commands:

```
\begin{table}
  \caption{Results of Overloading for 3 Experimental Setups}
  \begin{minipage}{\textwidth}
    \begin{tabular}{lcrrrrr}
    \hline\hline
    Program& Expt.&
     CPU\footnote{Seconds of elapsed time on an unloaded Sun 3/50.}&
     RelCPU\footnote{CPU Time relative to experiment (a).}&
     GC& Mem\footnote{Bytes of heap used over the duration of the program.}&
     RelMem\footnote{Memory usage relative to experient (a).}\\
    \hline
    8 Queens& (a)&   2\hpt 88&  1\hpt 00&    6&   1\hpt 7M&  1\hpt 00\\
    &         (b)&  32\hpt 51& 11\hpt 29&  193&  48\hpt 9M& 28\hpt 76\\
    &         (c)&   7\hpt 90&  2\hpt 74&   42&  11\hpt 3M&  6\hpt 65\\
```

Table 1. *Results of Overloading for 3 Experimental Setups*

Program	Expt.	CPU[a]	RelCPU[b]	GC	Mem[c]	RelMem[d]
8 Queens	(a)	2·88	1·00	6	1·7M	1·00
	(b)	32·51	11·29	193	48·9M	28·76
	(c)	7·90	2·74	42	11·3M	6·65
Primes	(a)	4·89	1·00	19	5·3M	1·00
	(b)	47·54	9·72	204	54·5M	10·28
	(c)	10·08	2·06	47	13·0M	2·45
Nfib	(a)	21·65	1·00	161	40·4M	1·00
	(b)	221·65	10·24	1382	349·0M	8·64
	(c)	21·30	0·98	161	42·0M	1·03
KWIC	(a)	7·07	1·00	15	6·3M	1·00
	(b)	34·55	4·89	109	47·8M	7·59
	(c)	31·62	4·47	53	45·0M	7·14

[a] Seconds of elapsed time on an unloaded Sun 3/50.
[b] CPU Time relative to experiment (a).
[c] Bytes of heap used over the duration of the program.
[d] Memory usage relative to experient (a).

```
   \noalign{\vspace {.5cm}}
   Primes&    (a)&    4\hpt 89&  1\hpt 00&   19&    5\hpt 3M&  1\hpt 00\\
   &          (b)&   47\hpt 54&  9\hpt 72&  204&   54\hpt 5M& 10\hpt 28\\
   &          (c)&   10\hpt 08&  2\hpt 06&   47&   13\hpt 0M&  2\hpt 45\\
   \noalign{\vspace {.5cm}}
   Nfib&      (a)&   21\hpt 65&  1\hpt 00&  161&   40\hpt 4M&  1\hpt 00\\
   &          (b)&  221\hpt 65& 10\hpt 24& 1382&  349\hpt 0M&  8\hpt 64\\
   &          (c)&   21\hpt 30&  0\hpt 98&  161&   42\hpt 0M&  1\hpt 03\\
   \noalign{\vspace {.5cm}}
   KWIC&      (a)&    7\hpt 07&  1\hpt 00&   15&    6\hpt 3M&  1\hpt 00\\
   &          (b)&   34\hpt 55&  4\hpt 89&  109&   47\hpt 8M&  7\hpt 59\\
   &          (c)&   31\hpt 62&  4\hpt 47&   53&   45\hpt 0M&  7\hpt 14\\
   \hline\hline
   \end{tabular}
   \vspace{-2\baselineskip}
 \end{minipage}
 \label{sample-table}
\end{table}
```

Notice the use of the \hpt macro to obtain the centered decimal points, inside the body of the table.

The `tabular` environment should be used to produce ruled tables; it has been modified for the NLE style in the following ways:

Fig. 1. An example figure with space for artwork.

1. Additional vertical space is inserted above and below a horizontal rule (produced by `\hline`);
2. Tables are centred, and span the full width of the page; that is, they are similar to the tables that would be produced by `\begin{minipage}{\textwidth}`.

Because of this reformatting, vertical rules should not be used; furthermore, commands to redefine quantities such as `\arraystretch` should be omitted. If the old tabular facilities are needed, there is a new environment, `oldtabular`, which has none of the reformatting; it should be used in exactly the same way.

4.4 Illustrations (or figures)

The NLE style will cope with most positioning of your illustrations and you should not normally use the optional positional qualifiers on the `figure` environment which would override these decisions. Figure captions should be below the figure itself, therefore the `\caption` command should appear after the figure or space left for an illustration.

Figure 1 shows an example of space left above a caption for artwork to be pasted in. This was produced with the following commands:

```
\begin{figure}
  \vspace{5cm} % the vertical depth of the artwork
  \caption{An example figure with space for artwork.}
  \label{sample-figure}
\end{figure}
```

The vertical depth should correspond roughly to the artwork you will submit; it will be adjusted to fit the final artwork exactly.

4.5 Bibliography

As with standard LATEX, there are two ways of producing a bibliography; either by compiling a list of references by hand (using a `thebibliography` environment), or

by using BibTeX with a suitable bibliographic database. However, contributors are encouraged to format their list of references in NLE style outlined in section 4.5.2 below.

4.5.1 References in the Text

References in the text are given by author and date. Whichever method is used to produce the bibliography, the references in the text are done in the same way. Each bibliographical entry has a key, which is assigned by the author and used to refer to that entry in the text. There is one form of citation – `\cite{key}` – to produce the author and date, and another form – `\shortcite{key}` – which produces the date only. Thus, Akmajian and Lehrer (1976) is produced by

```
Akmajian and Lehrer \shortcite{akm76}
```

while (Salton *et al.* 1990) is produced by

```
\cite{sal90}.
```

4.5.2 List of References

The following listing shows some references prepared in the style of the journal.

```
\begin{thebibliography}{}
  \bibitem[\protect\citename{Akmajian and Lehrer }1976]{akm76}
   Akmajian, A. and Lehrer, A. (1976) NP-like quantifiers and the
   problem of determining the head of an NP. {\it Linguistic
   Analysis\/} {\bf 2}: 295--313.
  \bibitem[\protect\citename{Huddleston }1984]{hud84}
   Huddleston, Rodney. (1984) {\it Introduction to the Grammar of
   English}. Cambridge: Cambridge University Press.
  \bibitem[\protect\citename{McCord }1990]{mcc90}
   McCord, Michael C. (1990) Slot grammar: a system for simpler
   construction of practical natural language grammars. In R.
   Studer (ed.), {\it Natural Language and Logic: International
   Scientific Symposium}, pp.~118--45. Lecture Notes in Computer
   Science. Berlin: Springer-Verlag.
  \bibitem[\protect\citename{Salton {\it et al.}\ }1990]{sal90}
   Salton, Gerald, Zhao, Zhongnan and Buckley, Chris. (1990)
   A simple syntactic approach for the generation of indexing
   phrases. Technical Report 90--1137, Department of Computer
   Science, Cornell University.
\end{thebibliography}
```

This list typesets as shown at the end of this guide. Each entry takes the form

```
\bibitem[\protect\citename{Author(s), }Date]{tag}
  Bibliography entry
```

where `Author(s)` should be the author names as they are cited in the text, `Date` is the date to be cited in the text, and `tag` is the tag that is to be used as an argument for the `\cite{}` and `\shortcite{}` commands. `Bibliography entry` should be the material that is to appear in the bibliography, suitably formatted. This rather unwieldy scheme makes up for the lack of an author-date system in LaTeX.

A Special commands in `nle.sty`

The following is a summary of the new commands, optional arguments and environments which have been added to the standard LaTeX user-interface in creating the NLE style file.

New commands

`\hpt`	to typeset a centered decimal point (*e.g.* 1·1). These are normally used inside the body of tables.
`\ls`, `\ns`	to letter space the author's name.
`\proofbox`	used with `\usebox` to place a proof-box in the text.

New optional arguments

`[<short title>]`	in the `\title` command: to define a right running headline that is different from the article title.
`[<short author>]`	in the `\author` command: to define a left running headline with text that is different from the authors' names as typeset at the article opening.

New environments

`proof`	to typeset mathematical proofs.
`proof*`	to typeset mathematical proofs without the terminating proof-box.

References

Akmajian, A. and Lehrer, A. (1976) NP-like quantifiers and the problem of determining the head of an NP. *Linguistic Analysis* **2**: 295–313.

Huddleston, Rodney. (1984) *Introduction to the Grammar of English*. Cambridge: Cambridge University Press.

McCord, Michael C. (1990) Slot grammar: a system for simpler construction of practical natural language grammars. In R. Studer (ed.), *Natural Language and Logic: International Scientific Symposium*, pp. 118–45. Lecture Notes in Computer Science. Berlin: Springer-Verlag.

Salton, Gerald, Zhao, Zhongnan and Buckley, Chris. (1990) A simple syntactic approach for the generation of indexing phrases. Technical Report 90–1137, Department of Computer Science, Cornell University.